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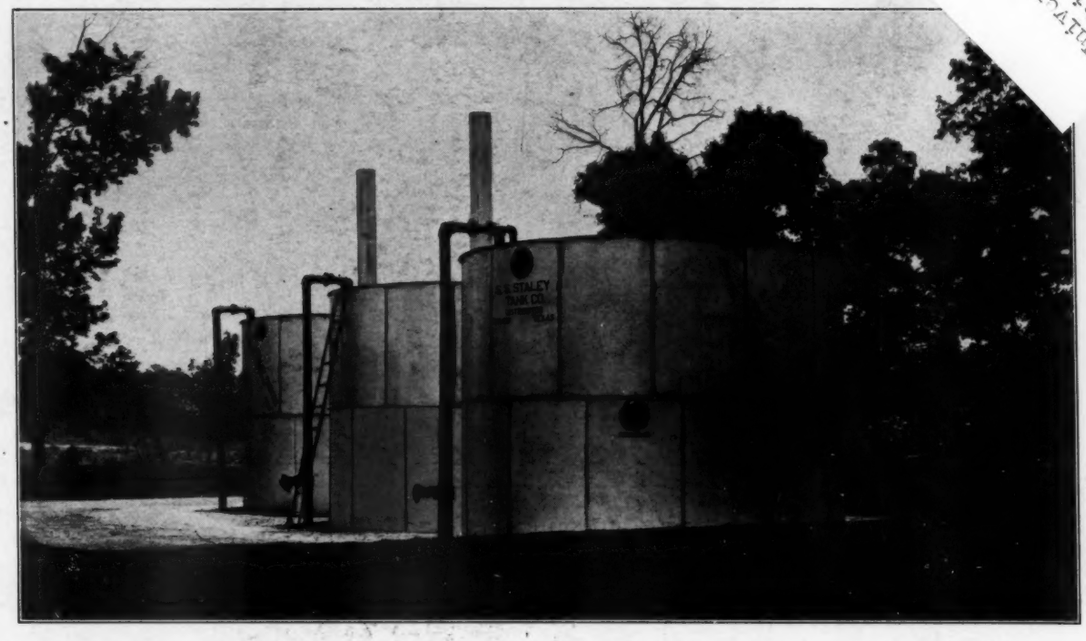

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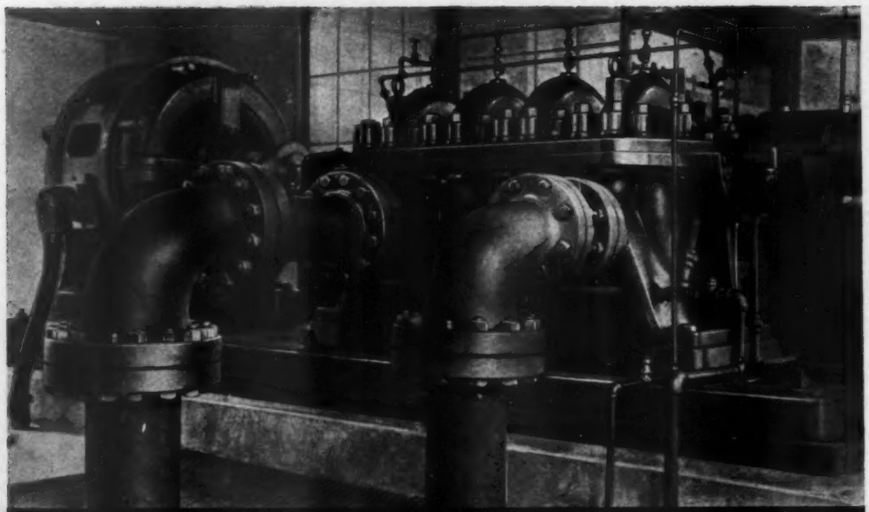

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PRODUCING REFINING PIPELINE ENGINEERING MARKETING

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Crude Market Outlook More Promising

Highest production in 1930, week ending Feb. 22, average daily output 2,699,096 bbls. Peak of U. S. production, week ending Aug. 24, 1929, average 2,975,435 bbls.

East Texas Problem Will Be Solved Either as Result of Aroused Public Opinion or Continued Overproduction

By Andrew M. Rowley

Lowest daily average crude oil production in the United States during 1930 was for week ending Dec. 27 with average output of 2,144,074 bbls.

Continued strengthening of the crude and refined oil markets indicates the petroleum industry is definitely on the upward trend. Governor Murray's shutdown of wells, in prorated fields, making more than 25 barrels daily, except those showing water, while exerting but little actual effect on the general situation has created a psychological reaction in Texas and Kansas which may lead to curtailment of crude oil production in those two states.

An aroused public sentiment in Texas may force state officials to take some definite action to eliminate the chaos existing in East Texas, regardless of failure of the special session of the Texas legislature to do anything constructive. Higher crude oil prices will come immediately when East Texas operators stop selling their crude oil for 10 or 15 cents a barrel. As long as those low prices prevail there, with production averaging nearly 650,000 barrels daily and sufficient outlet available to take care of this vast production, prices in other areas will remain at a low level.

Continued overproduction and low prices in East Texas will simply postpone better times for the petroleum industry as a whole a couple of months or so. East Texas, vast as it is, cannot continue to produce 650,000 barrels of crude a day without hastening water encroachment and the day when operators will have to install pumping equipment to bring the oil to the surface. The passing of the gushers will mark the elimination of the last of the operators in that area who have been calling themselves oil men but who have shown less common sense and business acumen than that usually exhibited by a three-year-old child.

Oklahoma's production this week probably will average around 260,000 barrels and is expected to stay somewhere near that level during the period of the shutdown. Many wells in the Seminole area have been exempted from the shutdown order because these wells are showing water. This condition and the fact production before the shutdown order was made effective was higher than usual, resulted in but a slight decline in the State's output last week. About 175,000 barrels daily is being withdrawn from storage in Oklahoma and Kansas.

PRODUCTION IN THE UNITED STATES

Estimated daily average production of crude oil in the United States for week ended August 8 and a comparison with the previous week follows:

	Aug. 8	Aug. 1
Oklahoma—		
Oklahoma City	84,585	65,840
Seminole-St. Louis	115,690	133,910
Remainder of State	220,560	224,980
Total Oklahoma	420,835	424,730
East Texas—		
Kilgore	275,721	233,714
Lathrop	147,918	136,996
Joiner	230,607	226,841
Total East Texas	654,246	597,551
West Texas	204,953	206,312
North Central Texas	78,149	79,892
Texas Panhandle	55,020	54,348
East Central Texas	50,051	47,449
North Louisiana	31,415	32,360
Arkansas	38,305	38,630
Kansas	101,930	99,540
Total Mid-Continent area	1,634,904	1,580,812
Gulf Coast	148,368	146,159
Southwest Texas	62,094	64,579
Eastern	105,000	105,000
Rocky Mountain area	94,441	92,873
California—		
Santa Fe Springs	62,250	62,250
Long Beach	74,750	73,500
Playa Del Rey	24,000	24,000
Elwood	26,500	25,750
Kettleman Hills	60,000	60,000
Remainder of State	259,500	255,500
Total California	507,000	501,000
Total United States	2,551,807	2,490,423

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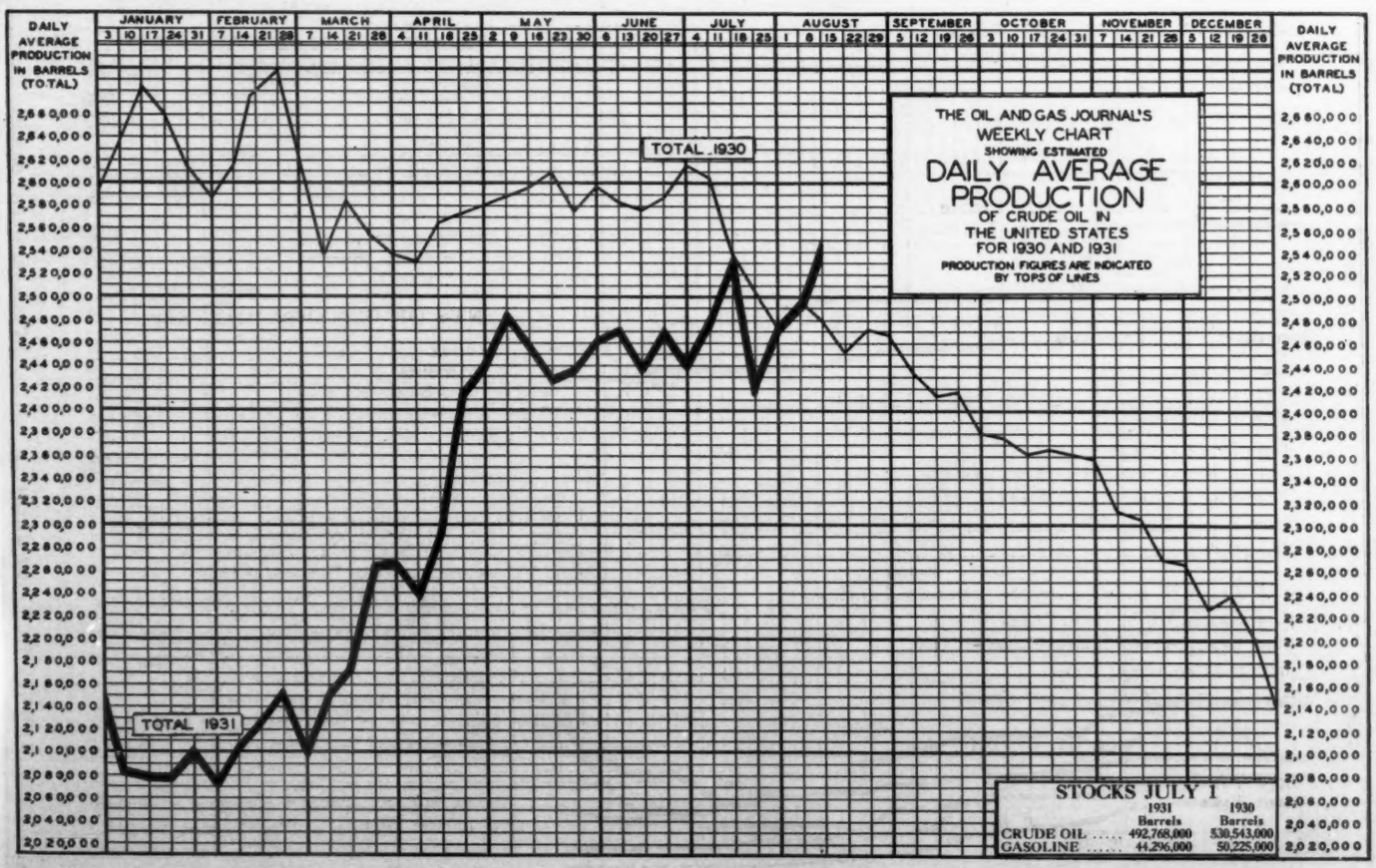

Oklahoma Gasolines Advance Rapidly

Both Refinery and Natural Gasoline Prices Increase Due to Threatened Shortage. Higher Bright Stock Quotations

By C. O. Willson

Refinery gasoline and natural gasoline prices in Oklahoma advanced rapidly the past week, both developments being the result of the governor's shut down of wells which were producing approximately 250,000 barrels of crude oil daily.

The U. S. Motor grade of gasoline advanced to a low of 3¾ cents the first of the week with many refiners quoting 4 and 4¼ cents for spot shipments on Tuesday. The going market in natural gasolines was difficult to determine. The supply for immediate delivery was apparently confined to two or three manufacturers and they were not anxious to sell being willing to wait to see if the next few days would not bring aditional advances. At the same time several manufacturers are trying to keep the prices in line with U. S. Motor gasoline manfacturers and prevent any runaway market which later would react unfavorably. The several grades were quoted on Tuesday over a price range of 4½ to 4¾ cents with sales of Grade A as high as 5 cents.

The strength shown in bright stocks since the first of the month resulted in a general advance of all grades the latter part of last week, the first price increase in that product in over a year within the Mid-Continent. The advances were from 1 to 2 cents a gallon. A better tone was also apparent in kerosene and prices are fractionally higher. The rest of the Oklahoma market so far as prices are concerned, is unchanged. Low cold test fuel oils, gas and furnace oils of low flash are scarce in Oklahoma with a better demand and generally higher prices are predicted for the immediate future. Due to the threatened shortage of crude oil supplies there has been better demand for high cold test gas oils and fuel oils suitable for cracking stocks but prices have not advanced.

REFINED MARKET BAROMETER

Refinery gasolines and natural gasolines continued to show strength throughout the United States during the past week. The price advances were largely confined to the Mid-Continent and Middle West, where a shortage of crude oil due to a shutdown of Oklahoma wells is the dominating market factor. Improvement in other refining areas is largely a reflection of the Oklahoma situation. Fuel oil and Diesel oils continued weak in the coastal areas and additional price reductions became effective along the Gulf Coast and East Coast. No general price changes were announced in kerosene. Steam refined stocks and bright stocks were generally strong and prices on western oils were advanced. Neutrals were unchanged. Slow demand for wax.

Mid-Continent—Refinery gasolines and natural gasolines advance rapidly in all areas. Better tone to kerosene market. Fuel oil, gas oil and furnace oil prices generally unchanged, with better demand for low cold-test material. Bright stock prices advanced.

East Coast—Bunker fuel oil and Diesel oil prices again reduced. Less distress gasoline offered. Kerosene slow. Better movement of lubricants. Seasonal dullness in gas oil. More inquiries for wax.

Chicago—With strong demand and limited supplies all grades of gasoline including natural gasolines advance rapidly. Better demand for lubricants at higher prices. No change in fuel oil and gas oil.

Pennsylvania—Continued strength in steam refined stocks and bright stocks. Gasoline firm with advances in some grades. Kerosene and wax unchanged.

Gulf Coast—Fuel oil and Diesel prices lower. Gasoline stronger. Routine trading in pale and red neutrals.

California—Gasoline prices firm. Good marine movement of fuel oil with slow industrial demand. Kerosene firm.

Governor's Market

The refinery market in Oklahoma and to a lesser degree the entire Mid-Continent and Middle West has been termed a "governor's market." This is true of the future as well as the present. Although as yet there has been no material decline in refinery operations as the result of Oklahoma governor's action the rapid upturn in gasoline prices of the past week was largely due to the fear that a shortage of crude supplies will develop which in turn will be reflected in the quantity of gasoline available before the end of the month.

The refinery crude oil situation for the entire Mid-Continent is explained in detail in an article appearing in this issue. Should the governor's shut down of wells continue, it is certain that some curtailment of Oklahoma refinery operations will be necessary. The alternative will be the purchase of supplies from East Texas fields a development which is already under way. To justify the purchase of East Texas crude oil many refiners will be compelled to increase the revenue derived from a barrel of crude oil and market observers point to this situation as indicating that additional advances in refinery gasolines are in prospect.

Watch Crude Developments.

Many buyers and sellers the first of the week were endeavoring to gauge the probable effect of the Texas legislature's failure to enact the desired laws to effectively control the production of East Texas fields. It is believed that if the legislature adjourns Wednesday without changing its present position, the action means that the Oklahoma governor will not be successful in securing $1 for Oklahoma crude, the objective when the largest wells of the state were shut in last week. With an unlimited low-priced supply in East Texas, it is felt that sufficient crude will be diverted for Oklahoma and other northern shipments to nullify the effect of the Oklahoma shutdown movement. Market students believe that such a development would mean that the refinery gasoline market would be held around present levels until the Oklahoma order became ineffective and normal conditions in regard to crude

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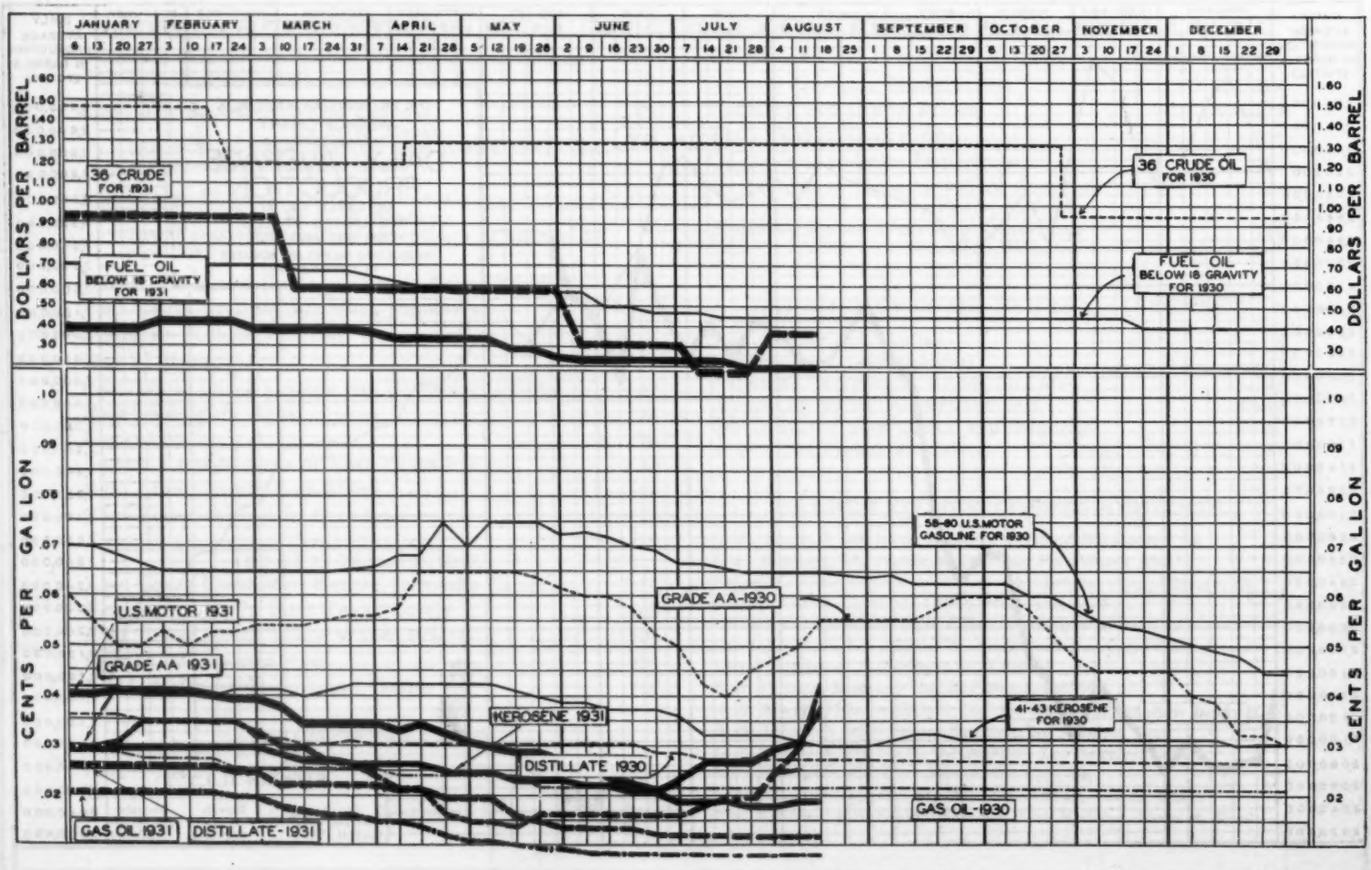

Texas Legislature Fails to Take Action

Deadlock on Measures Between Houses Brings Threat From Governor Sterling to Use Militia as Last Resort

By Special Correspondent

AUSTIN, Tex., Aug. 11—A conference committee agreement on oil conservation enforcement has been reached that is satisfactory to both the Woodward-Wagstaff forces and to Senator Frank Rawlings, Fort Worth, whose substitute was adopted in the Senate, thus presaging virtually certain adoption Wednesday of a satisfactory and workable enforcement bill, Senator Walter C. Woodward announced there tonight. Senator Woodward said both Senator Rawlings and himself will sign the conference report on a bill prohibiting consideration of market demand or price-fixing and giving the railroad commission sufficient latitude to act upon all phases of physical waste.

AUSTIN, Tex., Aug. 11.—Warning that martial law may be used in Texas oil fields, if the legislature fails in its last two days to pass an adequate enforcement law, was given by Gov. Ross S. Sterling late Monday.

Governor Sterling said the Rawlings senate substitute enforcement bill "weakened present inadequate laws," and his statement clearly implied it is wholly unacceptable, and that the three main alternatives for action by the legislature during Tuesday and Wednesday, or action by him were:

Senate's backing down and accepting Woodward-Wagstaff bill.

Defeat, or veto of the Rawlings bill, if passed, and a possible new session to try again.

Martial law.

Governor Sterling said he "sincerely trusts it will not be necessary to use the militia to protect the oil people from having the conservation laws trampled under foot; but that the legislature will find itself, and finally pass such remedial measures as will meet the situation." He said the senate's rejection of the Woodward-Wagstaff conservation bill was "a blow that has dazed the state."

Sterling's Statement

Governor Sterling's prepared statement follows:

"Upon urgent demands from people all over Texas, particularly the independent operators, this special session of the legislature was called for the primary purpose of strengthening our conservation laws.

"Naturally, the material improvement of the oil business would tend to strengthen every line of commercial and industrial endeavor, and to lessen the great economic depression that is upon us. The entire nation is affected by the wild scramble now going on to dissipate and deplete the natural resources of this state; and the nation is looking anxiously to Texas to remedy the chaotic situation existing within her borders.

State Dazed by Blow

"It is regrettable, and a blow that has dazed the state, that the majority of the senate rejected the Woodward-Wagstaff conservation bill, adopting in its stead what is known as the Rawlings substitute, which, analysis shows, would serve to weaken our already inadequate conservation laws, instead of strengthening them.

"I have received today hundreds of telegrams, principally from independent oil producers, royalty and landowners of the East Texas oil field area, protesting against the Rawlings substitute and urging that I do everything possible toward reinstating and making effective the Woodward-Wagstaff bill. The people of Texas know that I have done everything I could to protect their interests, and I shall continue to do so, though it may become necessary to resort to more drastic measures than have hitherto been used.

Many citizens of Texas feel that our conservation laws are being trampled under foot, and are asking the chief executive to use the militia of the state to protect them. I sincerely trust it will not be necessary to do this, but that the legislature will find itself, and finally pass such remedial measures as will meet the occasion."

Sterling Commended

Governor Sterling Tuesday afternoon displayed more than 100 telegrams, bearing about 500 signatures, from oil people throughout the State and chambers of commerce. He said all but one commended his stand announced in his promise to use martial law if necessary to restore order in East Texas oil operations. Many of them recommended calling a second special session. But Governor Sterling said he will do that "only

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Oklahoma Shutdown Has Little Effect

Companies Do Not Seem to Be Worrying and Allowed Production Still Remains at About 260,000 Bbls.

By Andrew M. Rowley

The order of Governor William H. Murray of Oklahoma shutting in all producing wells in prorated oil fields of the State, except those making less than 25 bbls. daily and those showing water or being worked over, issued August 4, resulted in a decline in Oklahoma's production last week of slightly less than 4,000 bbls. daily. It is estimated that the State's production during the current week and as long as the shutdown order is made effective will average approximately 260,000 bbls. daily. This output will come from the wells exempted from the shutdown order and small wells in fields which were not prorated and which do not come within the scope of the governor's order.

Refineries in Oklahoma will run to stills during August an average of 190,000 bbls. daily. Of this quantity, it is estimated approximately 10,000 bbls. will come from North Texas and Kansas. Refineries located along the borders of these States having procured this quantity of crude from the States mentioned heretofore.

Consequently, the crude oil requirements of Oklahoma refiners, for Oklahome crude will average only about 180,000 bbls. daily, leaving a balance of about 80,000 bbls. daily available for shipment out of the State by pipe lines.

Withdrawals from storage in Oklahoma and Kansas, before Governor Murray's shutdown order became effective, averaged about 100,000 bbls. daily. During the latter part of last week, after the order was effective, these withdrawals are understood to have averaged about 212,000 bbls. daily. Since the order became effective, it is said one large company has arranged to get 40,000 bbls. daily from East Texas, 20,000 bbls. of this quantity to be shipped by another company's pipe line to connect with its own pipe line in Texas for shipment north. The other 20,000 bbls. daily will be shipped by tank car from East Texas.

As soon as the arrangement made by this company becomes effective, and it is understood the arrangement mentioned

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KANSAS COMMISSION DEMANDS 60-CENT OIL OR SHUT DOWN

TOPEKA, Kans., Aug. 11.—Kansas purchasers of crude oil were given notice by the Public Service Commission Monday that unless the price paid for Kansas crude was advanced this week the commission would order a hearing to determine the nature and extent of a shutdown order for the state.

The letter, written by Thurman Hill, member, said:

"The commission has been reliably informed that Kansas refineries are now buying crude oil from Texas at an average cost of 70 cents per barrel. Strange as it may seem these purchases are being made because of a shortage in available Kansas crude. The commission, since the enactment of the proration law, has refused to consider a complete or partial shut down believing it was better for the interests of the state at large for the producers to suffer financial loss than laborers employed in oil field work, refineries depending upon crude oil from Kansas for its supply, and farmers who needed gasoline during harvest time.

"We knew the producers were at 42 cents a barrel receiving less than it cost to produce the oil, but we had no power to fix prices, nor did we desire to do so—but we believed as long as no competing oil from Oklahoma or Texas came into Kansas that we should not interfere.

"Now it appears that Texas, apparently willing to give away its natural resources, is dumping oil into Kansas costing an average of 70 cents per barrel laid down at refining points in this state while the same refineries are paying 42 cents average for oil of same gravity to Kansas producers. Assuming but not admitting that the gathering cost of Kansas oil exceeds Texas oil by 10 cents, it is clear that Kansas oil should be worth at least 60 cents per barrel. As a matter of fact based on Bureau of Mines statistics oil in Kansas today should bring $1.80 per barrel assuming supply and demand fix the price.

"With these facts confronting the oil division of the commission we no longer feel it our duty to withhold partial or complete shutdown orders. Unless the purchasers of crude oil in Kansas this week extend to the producers of Kansas the same consideration they are granting to the poducers of Texas crude a hearing will be ordered to determine the nature and extent of a shutdown order in this state."

Lieut. Col. Cicero Murray

Cousin of Gov. William H. Murray of Oklahoma. Colonel Murray is in active charge of troops in the martial law zones in the oil fields of Oklahoma. He also is chairman of the Oil States' advisory committee.

Refiners Little Affected By Shutdown

Governor Murray's Order Will Cause No Serious Change in Oklahoma Plant Operations Unless Settlement Prolonged

By W. T. Ziegenhain

Oklahoma refiners will not be forced into buying East Texas oil as a result of the shutting in of the Oklahoma City and Seminole Fields. Practically all companies have sufficient stocks and are getting sufficient stripper oil to permit them to run for at least six months. It is the belief that something definite will result long before the end of this period. In general, Governor Murray's shutdown order caused but slightly more than a checking up and adjustment of operating practices on the part of refiners. This is not true in a few cases where the refineries are dependent upon local fields for their crude supplies. For this reason the several small refineries in the Oklahoma City area feel the effect of the shutdown order most severely.

During August, Oklahoma refineries will run 191,500 bbls. of crude per day, based on schedules established early in the month. Oklahoma will produce approximately 220,000 bbls. of oil with the flush fields of Oklahoma City and Seminole shut in. Normally much of this oil moves to the Chicago area for refining there, but appreciable quantities of the Oklahoma oil is being replaced by East Texas oil and construction work is being rushed among the various pipe line carriers whereby considerably more East Texas oil may be supplied to Chicago to replace Oklahoma oil there.

Thus, instead of the shutdown affecting Oklahoma refiners, it is hastening the shift to East Texas oil on the part of refiners in the Chicago and Gulf Coast areas.

Larger Companies Unaffected

A check of the status of the larger Oklahoma refining units shows that, almost without exception, they are receiving stripper oil and hold stocks in storage to last six months or more. However, in many cases the storage oil cost considerably more than the present posted price of Mid-Continent oil at the time it was placed in storage and for that reason these companies do not like to withdraw it. They find themselves now in the same position as the ambitious man, thrown out of employment but with money in the bank. These companies are concerned with the shutdown order but they are not worried.

In those cases where the crude was placed in storage at high prices, the loss has since been written off the books. This will permit these companies to run the crude without actually showing a further decrease in earnings. Instead, the present shutdown program has had the effect of strengthening the gasoline market and it will be possible for these companies to liquidate any excess stocks and convert this crude into gasoline at a better price than if the old order of things had gone on.

Railroads' Position

Those refiners who will be forced to turn to East Texas for their oil will pay between 51 and 56 cents a barrel freight and will pay between 15 and 20 cents per barrel for the oil loaded in cars, according to the present market. The railroads are giving more serious attention to rail rates and in some instances, lower rates might be placed into effect as soon as they are sure the quantity justifies such a step. Improvements in the rail facilities are taking place among the four originating roads in the East Texas area and if the demand for this oil developed in Oklahoma, it is the general belief that sufficient rail capacity will be provided to move any reasonable amount to Oklahoma.

The volume of oil shipped into Oklahoma will likely be limited by the relatively high freight rates instead of any lack of rail facilities. It will be difficult for Oklahoma refiners to pay 55 cents as the delivery cost and compete with East Texas refiners in the sale of gasoline in the common marketing areas within the north central states.

There are four railroads along which oil shipments may originate in the East Texas area, including the I.&G.N., the T.&P., Santa Fe and the Cotton Belt. Special oil rates have already been published to the more important Oklahoma refining points. Revised rates have been published and will be made effective very soon at other points but in all cases the transportation cost will exceed 50 cents a barrel. The detailed rates on oil moving into Oklahoma refining centers is probably more conveniently seen in the accompanying map.

At present the three railroads are equipped to take deliveries from racks having space for a total of 1,900 cars. Probably in excess of 900 spots are available for loading quantities of oil not now under contract. As many as 1,200 cars could be moved out by the railroads daily, or 240,000 bbls. per day.

As the major companies complete their pipe lines they are relieving the railroads of their business which in turn may be diverted to any new business that may come from Oklahoma refiners. A detailed summary of all loading and transportation facilities together with storage is contained in another article in this issue of The Oil and Gas Journal on page 101.

Pipe Lines Position

Six major pipe companies could carry oil from the East Texas area to Oklahoma refineries. These include the Prairie-Sinclair combination line recently completed, Union-Gulf, Texas-Empire, Shell, Stanolind and the Humble-Standard of Louisiana-Oklahoma pipe line combination. The combined capacities of these lines could easily supply Oklahoma refineries with any deficit in their present supplies but these lines have been built for the purpose of taking oil out of Oklahoma and they are not expected to be made a factor in supplying oil to Oklahoma plants from East Texas unless the shutdown should continue over a period of many months. At present East Texas oil is being supplied to the Sinclair Oil & Gas Co. refinery at Sand Springs but this is the first instance in which pipe line deliveries have been made.

Within two weeks Sinclair will have completed a second 8-inch line from Colonels, Tex., to the Prairie line at Hensley to provide for handling 43,000 bbls. of north bound oil and by building additional pumping stations could boost this volume to 65,000 bbls. This oil would all remain in the Sinclair account, however, to be run in that company's refineries in the Mid-Continent and in Chicago. As a result, this oil would not be available to other Oklahoma refiners, but would release a corresponding volume of Oklahoma oil to them.

The Gulf Pipe line will not be made a factor in supplying Oklahoma refiners because its function is to supply crude to the company's refineries in Ohio and Pennsylvania and East Texas oil moving north through Oklahoma in this line will simply replace an equivalent volume of Oklahoma oil.

The Union-Gulf Pipe Line Co. is handling from 33,000 to 34,000 bbls. per day to eastern points through Oklahoma. Of this amount about 20,000 bbls. of oil originate in East Texas and the balance is made up out of Seminole area. The proportions of East Texas and Seminole oil handled east from here will vary with conditions. Sometimes it is necessary to ship additional Seminole oil to the southern end of the Gulf Pipe Line Co. system, and at other times they have extra Seminole oil for delivery to the eastern end of the system.

To keep these balances as desired the oil brought up from East Texas may be put in storage in this state temporarily and later picked up again as Seminole demand decreases. At this time they are handling only about 9,000 bbls. of oil per day east from Seminole. This oil is all for the use of the Gulf Refineries.

The Shell line could handle crude from East Texas to Oklahoma points for distribution from their tank farm at Cushing, but it would require that this oil be first pumped to Houston from Texas through new line now being constructed and then from Houston to McCamey, Healdton and Cushing. Because of their need for oil for their own use it is not likely that they will undertake to transport oil from East Texas, even by this round-about way as common carrier as any oil they may secure will probably be sent to their plant at Wood River, Ill.

Both The Texas Company and the Empire companies have sufficient storage to permit them to run their Oklahoma refineries for many months without reversing their lines to bring East Texas oil north. However, with the announcement by these companies of a combined line to be laid from the East Texas field to the Gulf Coast, it will be easy for them to use the present system for the transportation of East Texas oil north, both in Oklahoma and into their refineries in the Chicago area.

The Stanolind Pipe Line Co. will probably operate in the same manner as the other companies mentioned previously. Its interest will probably lie chiefly in supplying East Texas crude to the company's refinery in Chicago and any oil it takes from the East Texas field will replace a corresponding volume of other Mid-Continent crudes including a large portion of Oklahoma oil. A tentative arrangement is said to have been made for the delivery of 20,000 bbls. of East Texas oil to the company's pipe line at Mexia, Tex., where it will be picked up and piped through Oklahoma to be run in the Chicago plant. A similar volume is expected to move by tank car to this plant if suitable rail arrangements may be effected.

The sixth pipe line in the group, the Humble-Standard of Louisiana-Oklahoma pipe line is now revising pumping equipment to reverse its line and will soon be able to transport 40,000 bbls. of East Texas crude north. It is imperative that the line supply the Standard of Louis-

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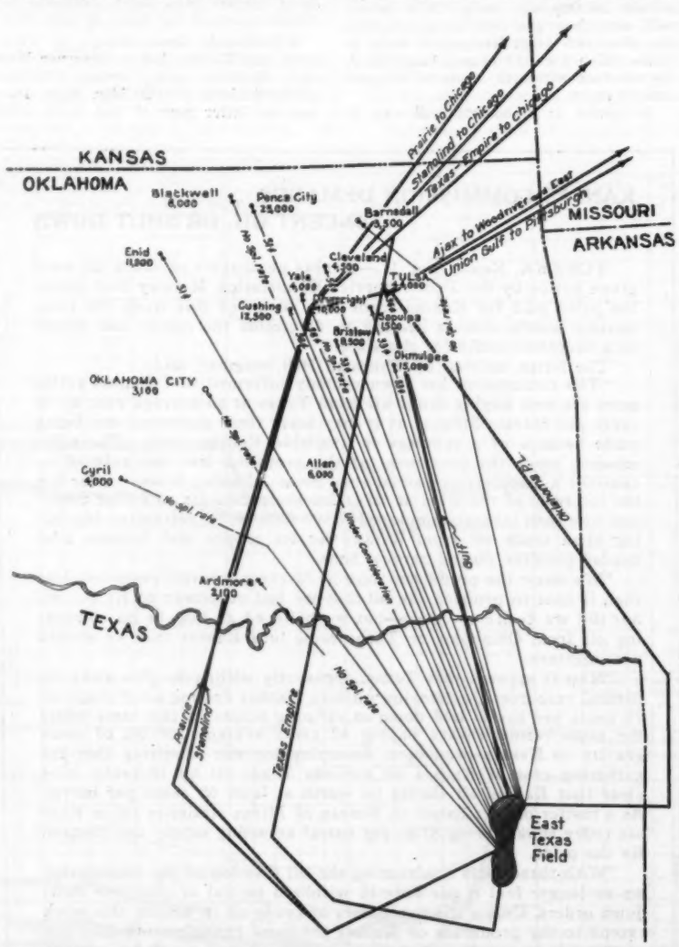

Oklahoma refining area showing cost of shipping East Texas crude to the more important refining centers. Rates shown are already in effect in most cases, but will not apply to Yale, Cushing and Cleveland until September 4. Rates to Enid and Ponca City approved but not published. The small figures below each location show daily crude runs in refineries there.

East Texas Has Enormous Crude Outlet

Record-Breaking Construction of Pipe Lines, Gathering Systems and Loading Racks Provide Facilities

By L. E. Bredberg

All information regarding pipe lines, gathering systems, loading racks and storage in East Texas, in tabular form, will be found on Pages 98, 101 and 102.

TYLER, Tex., Aug. 10.—The number of loading racks, gathering systems, trunk lines and refineries giving added outlets to the East Texas district, continue to grow. Announcements almost every week state that some independent company or group of independents will build another refinery in the district, or will lay a gathering system and erect another loading rack on one of the three railroads which have been overloaded for months by tank car shipments. Major companies also have been aggressive in laying such lines and building loading racks for shipments of oil by tank car, while they have been exceptionally active in constructing trunk lines from the district to Gulf Coast refineries or terminals, or have built lateral lines connecting to Mid-Continent-Gulf Coast trunk lines which intersect the East Texas district or are adjacent to it.

Independent pipe line companies were formed soon after the discovery of the Joiner well in Rusk County in October, 1930, and built several gathering systems and short lines to loading racks at Friars Switch on the I.&G.N. Railroad north of the pool, crude from the field being loaded out at these racks for several months before any major company entered the district. But after the Humble Pipe Line Co. started construction on a lateral 8-inch line from the Kilgore Pool to connect with its Van-Louisiana line south of Longview, other major pipe line companies became active in pipe line construction. The low price for which the East Texas crude was selling no doubt had much influence on the construction of such trunk lines, the companies taking advantage of the low price, and proximity to Gulf refineries and terminals. Only about 200 miles of pipe is needed to reach such terminals from the newly discovered district, which is a much shorter distance than to the West Texas, Panhandle and Wichita Falls Pools from the coast.

Steel Storage Program

Companies were slow in starting construction on steel storage tank farms, price of the oil not meriting the building of much storage by the independent operators who have to depend on major purchasers to take their production, and the major pipe line companies did not start early construction due to their shipping the oil direct to the coast, to refineries there, or to terminals from which it was shipped to refineries on the eastern seaboard. Trunk line runs decreased from other and more remote districts in the State, the major purchasers concentrat-

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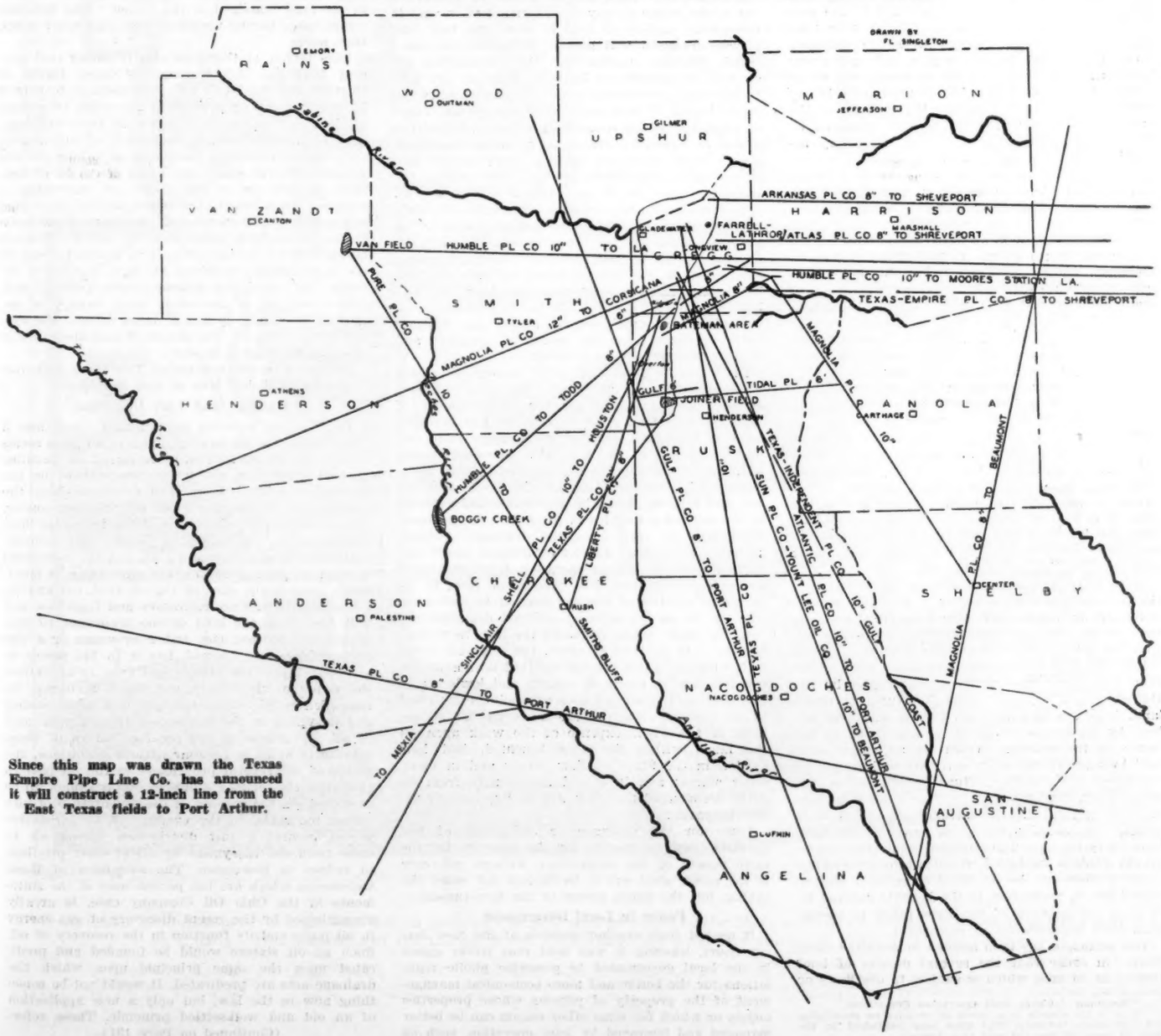
MAP OF TRUNK PIPE LINES IN EAST TEXAS AREA



Since this map was drawn the Texas Empire Pipe Line Co. has announced it will construct a 12-inch line from the East Texas fields to Port Arthur.

State Should Require Efficient Methods

May Prescribe Manner of Exploiting Oil and Gas Pools to Protect One or More Owners in a Common Pool

By Earl Oliver*
Prepared in Collaboration with W. P. Z. German, General Attorney, Skelly Oil Company, Tulsa

Previous articles of this series published in The Oil and Gas Journal have set forth five principles that we believe must be incorporated into the law of oil and gas and become recognized practices of the petroleum industry before system, order and prosperity will return to it. It is the purpose of this article to discuss the third principle, namely, that the State should require and prescribe efficient methods of exploiting oil and gas pools. The State may do this to protect one or more owners in a common pool against injury resulting from improper methods used by other owners in the same pool, or it may do so to protect society against destruction of these natural resources.

In considering this particular point I find nothing elsewhere that sets out with equal clearness the right of the State to prescribe methods of oil field development and operation, or more clearly suggests procedure for safeguarding not only the public interest but that of each individual owner than does Mr. German's recent paper, "Compulsory Unitization of Oil Pools." It also indicates means by which joint efforts for the common good of all owners in the pool can be financed, namely, by making them a charge against the contents of the reservoir. Not only does the method suggested by Mr. German promise to eliminate the injury being done both to society and the common owners by the present methods, but it provides a means whereby the owners collectively in any pool can operate and control their property instead of having it controlled by government agents as is necessary under present proration systems. It would not require adherence to any certain specified type of operation. On the contrary it would permit the owners acting collectively in any given pool to exercise the utmost freedom of choice in determining the type of co-operation they desired in that particular pool, consistent with sound public policy. I, therefore, use that part of the paper that bears on this subject for the balance of this article.

New Application of Law

The principle underlying the Ohio Oil Company case (which first set out the rights of the State to regulate oil field operations) and kindred decisions is not new. It is older than our Government. It is embodied in the ancient maxim of the common law that everyone must so use his own property as not to injure the rights of others, which lies at the base of a proper exercise of the police power. It happens that this principle has been but recently applied to conditions in this comparatively young and now rapidly growing industry.

Many years ago it was stated by the courts that the Government has the power to prescribe regulations for the better and more economical management of property of persons whose properties adjoin, or which, for some other reasons, can be better managed or improved by some joint operation. This early announcement was quoted by the United States Supreme Court in Wurts v. Hoagland, 114 U. S. 606, 29 L.ed. 229. It was long ago held by courts, as is shown by quotations in the Wurts case, that where there are adjoining lands held by various owners in severalty and which, by reason of the peculiar natural conditions of the whole tract, cannot be improved or enjoyed by any of them without the concurrence of all, there is presented a condition where the power of the legislature may be exerted to establish regulations whereby all may be compelled to submit to proceedings whereby they may be improved or enjoyed, and to contribute, in proportion to the benefits enjoyed by each, to the expense of the steps taken to accomplish such improvement or enjoyment.

This principle has been applied in drainage cases where, in order that the several owners of land located in an area which is subject to overflows or wherein swamps exist, and, as a result, the establishment of drains is necessary to the better enjoyment by the several owners of their respective tracts within the area. It has long been applied to party walls, partition fences and other conditions. Its applications to a variety of situations furnishes to us something which the Supreme Court did not suggest in the Ohio Oil Company case as a means for accomplishment of an enforced fair and equitable distribution of the oil and gas reservoir content among the several proprietors whose lands lie within the pool.

Regulation in Drainage Cases

The establishment of drainage districts by or under the legislative authority is an exercise of the police power of the state. While drains cannot be provided for purely private purposes, the public benefit required need not be a use or benefit to the whole public or any large portion of it, and if the public purpose is kept in view, the fact that private interests will also be promoted is immaterial. Statutes authorizing the reclamation of swamps or agricultural lands by drainage are held to be valid independently of any effects upon the public health, if they tend to the general advantage or prosperity of the community (19 C. J. 610). The power to construct drains is a special authority given for a particular purpose and may be conferred upon any person or body upon which the legislature may see fit to confer it (19 C. J. 611). A reclamation statute creating reclamation districts and providing that those who are interested in the land and must pay for the improvements shall determine by an election whether the improvement shall be made, was sustained in California (48 Pac. 1016). The Indiana Supreme Court held (99 N.E. 742) that public ditches, like public highways, are subjects of the state's control, and it may delegate to interested persons the power of initiative and declare the extent of jurisdiction.

In Wurts v. Hoagland, cited above, an attack was made upon an act of the legislature of New Jersey which provided for the establishment of drainage districts for the reclamation and improvement of swamp or overflow lands. There were certain provisions of the law with reference to the payment of the expense of construction and maintenance of the system, one of which was that the cost and expense should be distributed and assessed to the several properties in proportion to the benefit derived by each from the drainage. A landowner in a drainage district established under this statute asserted that its operation deprived him of his property without due process of law. It requires no stretch of the imagination to look upon this statute as an enforced unitized drainage system. The state courts sustained the law. In reviewing the case on writ of error, the Supreme Court of the United States pointed out that laws authorizing drainage of tracts of swamp and lowlands by commissioners appointed upon proceedings instituted by some of the owners of the lands, and the assessment of the whole expense of the work upon all the lands within the area benefited, had long existed in the State of New Jersey and in many other states; and it quoted approvingly from an early decision of the New Jersey Supreme Court, this language:

> Laws for the drainage or embanking of low grounds, and to provide for the expense, for the mere benefit of the proprietors, without reference to the public good, are to be classed, not under the taxing, but the police power of the Government.

Power in Local Government

It quoted from another decision of the New Jersey court, wherein it was held that power exists in the local government to prescribe public regulations for the better and more economical management of the property of persons whose properties adjoin or which for some other reason can be better managed and improved by joint operation, such as the power of regulating the building of party walls, the making and maintaining of partition fences and ditches, the construction of ditches and sewers for the draining of uplands and marshes, which can more advantageously be drained by a common sewer or ditch; and that this is a well-known legislative power, recognized and treated by all the courts and writers upon law throughout the civilized world; a branch of legislative power exercised both before and since the Revolution and before and since the adoption of the present Constitution, and repeatedly recognized by the courts of New Jersey. In that case, the New Jersey court is quoted as having held that the principle of all these laws is to make an improvement common to all concerned and at the expense of all; that in none of the works established under such laws is the owner divested of his fee, and for all purposes the title of the land remained in the owner. The Supreme Court, after having reviewed these and other cases, then said:

> This review of the cases clearly shows that general laws for the drainage of large tracts of swamps and lowlands upon proceedings instituted by some of the proprietors of the lands to compel all to contribute to the expense of their drainage, have been maintained by the courts of New Jersey (without reference to the power of taking private property for the public use under the right of eminent domain, or to the power of supressing a nuisance dangerous to the public health) as a just and constitutional exercise of the power of the legislature to establish regulations by which adjoining lands, held by various owners in severalty, and in the improvement of which all have a common interest, but which, by reason of the peculiar natural conditions of the whole tract, cannot be improved or enjoyed by any of them without the concurrence of all, may be reclaimed and made useful to all at their joint expense.

Numerous cases sustaining the same principle might be cited, but lack of time forbids.

Drainage and Unit Operation

The analogy between the drainage cases and a requirement for the unit operation of oil pools seems to be clear. In the former, by reason of the peculiar natural conditions, the whole area cannot be improved or enjoyed to its full extent without the concurrence of all, and since all will not concur, they may be compelled to conform to a plan best calculated, on the whole, to secure and promote both the common interest of all and the individual interest of each of them. This same thing is manifestly true in the case of the oil pool. Oil and its accompanying gas are migratory and fugacious and will pass from the land of one proprietor to that of another, so that one, either by waste or a disproportionate use thereof, has it in his power to seriously injure the other's and even to annihilate the rights of the others, and hence each may be compelled to yield, not his title, but some control and dominion in the interest of the common good of all. By reason of the peculiar nature of these substances and the peculiar natural conditions, the rights of the several proprietors in the oil pool to take from the common source of supply cannot all be protected (in the absence of the concurrence of all) unless the state, in the exercise of its legislative power, secures a just distribution among all to arise from the enjoyment by all of their privilege to reduce to possession. The soundness of these statements, which are but paraphrases of the statements in the Ohio Oil Company case, is greatly strengthened by the recent discovery of gas energy in oil pools and its function in the recovery of oil. Such an oil statute would be founded and predicated upon the same principle upon which the drainage acts are predicated. It would not be something new in the law, but only a new application of an old and well-settled principle. These refer-

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*Chairman A.I.M.E. Unit Operation Committee.
This is the fourth in a series of articles on stabilizing the petroleum industry. The first was published in the July 23 issue of The Oil and Gas Journal.

Views taken as Oklahoma National Guardsmen entered the prorated oil fields of the State and shut down all wells making more than 25 bbls. daily. Headquarters of the troops in the Oklahoma City Field are shown in lower left-hand corner.

Refinery Runs to Establish New Peak

New East Texas Plants Equalize Curtailed Runs in Oklahoma Caused by Forced Shutting In of Flush Production

By W. T. Ziegenhain

Increased crude runs in the East Texas refineries will equalize the decrease in the refinery operations in the Oklahoma plants as a result of any shortage of crude and the total runs for the Mid-Continent area in August will be highest in the history of the industry. The schedules of a few Oklahoma refineries still remain doubtful as new sources of crude supplies must be found before the end of the month, but these cases are not typical and it is probable that any acute needs could be filled without too great a loss in transportation charges by importing crude from the East Texas fields.

The daily crude schedule for the entire Mid-Continent area is shown as 590,545 bbls. for August, which is about 1,700 bbls. above the schedule for July. Considering the effect of the shutting in of the Oklahoma City and Seminole Fields from this angle, it is apparent there will be no general disrupting of operations.

A better indication of the ineffectiveness of the shutting in of the flush fields insofar as refinery operations are concerned may be gathered from the fact that the present total schedule is 64,000 bbls. higher than the schedule of a year ago.

The runs have remained high because most refiners are getting sufficient stripper oil, so the withdrawal from crude stocks will not represent a serious item. The value of these crude stocks have already been marked down on the balance sheets of these companies and many figure that if the gasoline market will advance a cent during the present month of high consumption that it will pay to liquidate a portion of these stocks. In the few cases where this is not possible these companies are planning to shut down or are bidding for cheap East Texas crude to be delivered by tank car. Fortunately for East Texas refiners, the Oklahoma shutdown has permitted the new East Texas plants to start up without causing an increase in the total operating capacity in the Mid-Continent.

Oklahoma Operations

Most interest is focussed on the Oklahoma refinery operations for August because soon after the order was issued by Governor Murray to shut in flush production in Oklahoma, there was a variety of opinions as to its effect on refinery operations for the month. A check of the status of the individual companies as shown in another survey included in this issue of The Oil and Gas Journal shows practically all plants could run at their present schedules for at least six months without going out of the state for oil.

Only two plants now appear on the list of shutdown plants that operated in July. The larger is the Globe Oil and Refining Co.'s 15,000 barrels refinery at Cushing and the other is the Century Petroleum Co. plant at Tulsa. The former plant has been shut down for several weeks as a result of the adverse conditions in the refinery market and the immediate cause was the voluntary shut down of the producers in the Oklahoma City Pool prior to Governor Murray's order. The Century Petroleum Co. plant has operated intermittently and has depended principally upon tank car deliveries of crude from Oklahoma City. The company has an Oklahoma City refinery also which is operating at present.

The principal change in operations among the active plants is the curtailing of runs in the Ponca City refinery of the Continental Oil Co. The runs have been decreased here from 27,000 bbls. in July to 15,000 bbls. this month. The company is able to do this as a result of completing the revision of two Cross cracking units. These units will operate on stocks of residuum built up during the past months when the crude schedules were maintained at a high rate. Company officials expect to manufacture as much gasoline during the present period of decreased crude runs as during July. This program is not the result of the shutting in of the Oklahoma Fields but the result of the plant improvements started several months ago.

Operations have been curtailed in the Oklahoma City plants principally and the situation has become more serious here than in any other part of the state. Arrangements have been made for supplying the Black Gold Refining Co., and the Capital City Refining Co., but the other plants have not announced that new sources of supplies have been contracted for. The Gulf States Corp. has curtailed its runs considerably, expecting to prolong the operation of the plant on the stock at hand in anticipation of some change in the present course of affairs in the crude market. The company is observing a similar course in the operation of the White Oak Corp. plant at Allen.

North Central Texas

The north and east central Texas group of refineries show an increase in their August runs of 18,170 bbls. daily, due principally to the starting up of new refineries in the East Texas area. These plants include the Central Refining Co.'s plant at Friars Switch, the Kilgore Refining Co.'s 1,500-bbl. plant at Kilgore, the Rusk Refining Co.'s 3,000 bbl. plant at Overton and the Arrow Refining Co.'s 2,500-bbl. plant, also at Overton. The Central Refining Co. the largest of the new refineries will operate on a schedule of 7,500 bbls. during August. The other plants will operate on schedule below their respective capacities but will add 3,300 bbls. to the total East Texas runs.

New refineries under construction in the East Texas area include a 10,000 bbl. plant at Longview, being built jointly by the Danciger Oil and Refining Co., and the Bell Oil and Gas Co. A 3,000 bbl. plant is being built at Overton by the Constantin Refining Co.

More recently plants were started at Kilgore and Gladewater. The Kilgore refinery is being built by the Blue Ribbon Refining Co., and will have a capacity of 1,000 bbls. The plant at Gladewater will have a capacity of 500 bbls., and is being built by George Ames who is associated with the Cherokee Chieftain Oil Co. The most recent plant to be announced is that of W. B. Mackey and associates who will build a 500-bbl. refinery at Gladewater also.

Outside of the East Texas area there was one new plant to be added to the Texas list. This is the Apache Refining Co. at Sunray, which will run an average of 2,000 bbls. daily for the month. This plant has a capacity of 4,000 bbls. and the sales will be handled by the Sunray Oil Co.

Another plant soon to be added to the list of those operating is the Sinclair Oil and Gas Co.'s skimming plant at Fort Worth. Shell stills and a tower is now being erected which will provide for the running of 4,000 barrels of crude per day. The plant is expected to be in operation within the next 45 days. This refinery has been shut down for many months and its reopening is expected to be occasioned by the fact cheap East Texas oil will be made available there.

As a result of these new plants the total Texas runs have been increased to 168,130 bbls. or nearly 20,000 bbls. more than the schedule last month. The only other important change in the operating schedules of the north central Texas refineries is the shutting down of the Humble Oil and Refining Co. plant at Breckenridge.

Kansas

Kansas continues to maintain a high operating schedule amongs its refineries. Every plant is operating and crude runs for August will reach 110,700 bbls. daily or 8,000 more than a month ago.

West Texas

West Texas operations have been curtailed in much the same manner as those of Oklahoma. The effect of cheap crude in the East Texas area has been felt here

(Continued on Page 133)

MID-CONTINENT REFINERY OPERATIONS

CRUDE RUNS TO STILLS

	1929	1930	1931
January 1	508,550	535,460	478,795
February 1	506,800	519,355	470,125
March 1	514,950	531,500	449,634
April 1	530,530	555,250	497,391
May 1	577,500	574,300	510,640
June 1	583,030	572,250	567,915
July 1	565,800	548,475	588,840
August 1	555,250	526,400	590,545
September 1	552,300	498,710	.....
October 1	544,720	518,800	.....
November 1	545,473	506,700	.....
December 1	540,630	478,360	.....

OPERATIONS BY DISTRICTS

	August 1				July 1		
District—	No. of plants	Daily crude cap. (bbls.)	Daily crack. cap. (bbls.)	Runs to stills	Plants oper.	Runs to stills	August daily incr.
Arkansas	9	47,800	21,250	30,500	9	29,900	600
Kansas	15	150,000	88,200	110,700	15	102,700	8,000
N. Louisiana	7	54,300	18,000	35,425	5	33,125	2,300
Oklahoma	52	335,300	119,150	191,500	38	210,500	19,000*
N. C. Texas	57	264,950	62,600	168,130	52	149,960	18,170
West Texas	29	147,600	53,250	54,290	21	62,655	8,365*
Total	169	999,950	363,450	590,545	140	588,840	1,705

*Decrease.

REFINERY OPERATIONS IN OKLAHOMA

(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs Aug. 1	Runs July 1
Altitude Petroleum Corp., Oklahoma City	3,000	1,000	1,500
Anderson-Prichard Oil Corp., Cyril	5,000	4,000	4,000
Barnsdall Refineries, Inc., Barnsdall	6,000	3,500	3,500
Barnsdall Refineries, Inc., Okmulgee	10,000	6,500	6,000
Bell Oil & Gas Co., Grandfield	4,500	2,000	2,000
Black Gold Refining Co., Oklahoma City	1,500	800	800
Capital City Refining Co., Oklahoma City	2,500	800	800
Century Petroleum Co., Tulsa	500	(*)	1,000
Century Petroleum Co., Oklahoma City	2,500	1,200	2,000
Champlin Refining Co., Enid	16,000	14,500	12,000
Citizens Refining Co., Seminole	1,000	(*)	(*)
Continental Oil Co., Bapulpa	10,000	1,500	1,500
Continental Oil Co., Ponca City	30,000	15,000	27,000
Cushing Refining & Gasoline Co., Blackwell	1,800	1,500	1,500
Cushing Refining & Gasoline Co., Cushing	3,500	2,500	2,500
Deep Rock Oil Corp. (Shaffer), Cushing	10,000	10,000	10,000
Eason Oil Co., Enid	5,000	3,000	3,000
Empire Oil & Refining Co., Cushing	5,000	(*)	(*)
Empire Oil & Refining Co., Okmulgee	4,000	4,000	4,000
Empire Oil & Refining Co., Ponca City	12,000	10,000	10,000
Garber Refineries, Inc., and Omar Refining Co., Garber	3,500	2,500	2,800
Globe Oil & Refining Co., Blackwell	7,500	6,500	6,500
Globe Oil & Refining Co., Cushing	15,000	(*)	5,000
Gulf States Corp., Oklahoma City	3,500	800	3,500
Illinois Oil Co., Cushing	3,000	(*)	(*)
Imperial Refining Co., Ardmore	5,000	(*)	(*)
Johnson Oil Refining Co., Cleveland	6,000	4,400	4,500
McCullough Oil Co., Oklahoma City	2,000	(*)	(*)
Mid-Continent Petroleum Corp., West Tulsa	40,000	18,500	20,000
Marathon Oil Co., Boynton	2,500	(*)	(*)
Marathon Oil Co., Bristow	5,000	4,000	4,500
Morgan Development Co., Tonkawa	3,000	(*)	(*)
Peppers Gasoline Co., Covington	1,000	700	700
Phillips Petroleum Co., Okmulgee	5,000	5,000	5,000
Producers Oil Co., Bristow	2,500	1,400	2,000
Producers & Refiners Corp., West Tulsa	6,000	4,500	4,000
Pure Oil Co., Ardmore	5,000	2,500	2,100
Pure Oil Co., Muskogee	9,000	7,500	7,500
Rock Island Refining Co., Beckett	3,500	3,250	3,300
Sinclair Refining Co. (Pierce), Sand Springs	3,000	5,000	5,000
Sun Oil Co., Yale	5,000	3,800	4,000
Sunray Oil Co., Allen	7,000	4,000	3,500
The Texas Company, West Tulsa	15,000	14,000	14,000
Texas Pacific Coal & Oil Co., Wynnewood	3,000	1,500	1,500
Tidal Refining Co., Drumright	15,000	10,000	10,000
Western Oil Corp., Beckett	2,000	1,200	1,500
Wewoka Refining Co., Wewoka	2,000	(*)	(*)
White Oak Corp., Allen	8,000	2,000	4,000
Wilcox Oil & Gas Co., Bristow	5,000	2,500	2,500
Wirt Franklin Petroleum Corp., Ardmore	4,000	3,150	3,000
Yale Oil Corp., Yale	2,000	1,000	1,000
York Refining Co., Oklahoma City	3,000	(*)	(*)
Total	335,300	191,500	210,500

*Shut down.

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THE RESULT

Oklahoma production is coming down and East Texas production is going up.

That is the immediate effect of Governor Murray's order shutting down Oklahoma wells until the price reaches a dollar a barrel.

Nor is there any indication it will have any other effect until East Texas is curbed or exhausted.

The main buyers of Oklahoma crude are sufficiently supplied with oil for the rest of the main consuming season and beyond. If necessary, oil can be had from East Texas for much less than a dollar a barrel.

So long as that condition continues in East Texas "all the king's horses and all the king's men" cannot make Oklahoma crude worth a dollar in the world's markets.

If the governor sits tight and he is not upset by a test in the United States Supreme Court, the outcome will lie with the economic turn of the events.

The greater production there, following the shutdown in Oklahoma, will hasten the peak in East Texas. Unregulated drilling will bring in the water sooner, unrestrained production will speed the day when pumping must be resorted to, and as the district slides down into settled production oil may again be worth a dollar or more and Oklahoma's ban will be lifted, not by command of the governor but by the normal working of supply and demand.

That is the outlook unless East Texas can be brought to see the folly of its course.

Expectation that the special session at Austin would result in effective conservation legislation was abandoned weeks ago. The governor's eleventh-hour threat of imitating Governor Murray was not taken seriously.

There was some hope that Governor Murray's dramatization of the disastrous effects of cheap oil upon both the producers and the State might show the Texas legislature and East Texas producers where they were heading.

But some people are so stubborn they cannot be shown. Especially if their stubbornness is stiffened by prejudice. They start out with a fixed idea, no matter how wrong it may be, and refuse to face the facts or listen to reason.

Take this idea that the price of oil has been beaten down by the big companies to take advantage of the little fellows.

When East Texas first loomed as a menace the independent operators there were warned that overproduction would force down the price. They treated the warning as "just another trick of the big companies" to keep them from going ahead. Then when their overproduction and their haste to realize on their wells led them to offer their oil for anything they could get and the price fell in consequence they blamed it on the big companies.

When the Texas Commission tried to stem the overproduction it was denounced as a tool of the "interests" and demagogues playing on these same prejudices muddled the legislature into a seemingly hopeless confusion.

Yet, all the time, if East Texas operators had not produced their oil recklessly and glutted the market in the face of every warning, or if they had respected the regulations of the Railroad Commission, they would have been getting a decent price for their oil and assuring themselves a long period of stable prosperity instead of a frenzied hour of prodigal wastefulness.

There would have been no 10 and 15-cent oil to be picked up by buyers who had such bargains thrust upon them by the greed of the sellers for instant returns, however small compared to what they could have secured by heeding the warnings and holding back their production until they could get a proper price for it.

Instead of thwarting the supposed schemes of the big companies these reckless producers have thrown themselves into their hands. Today the big companies can have all the oil they want at any price they want, because the producers have overstepped themselves.

As the field becomes more developed and water intrusion and pumping costs present new problems to the small operators which cannot be met with 15-cent oil they will be forced to the wall and out of the business.

And the legimate oil industry need have no sorrows for their fate which they brought upon themselves.

Most of them were inexperienced in the oil business, getting into it either by luck or the lure of hoped-for sudden wealth. They were not oil operators and they certainly were not business men or they would have seen the folly of flooding an already glutted market with oil that was bound to get cheaper with each additional barrel brought to the surface.

Not even the shutdown in Oklahoma seems to have taught them anything. Instead of welcoming that episode as a chance to get better prices by holding down their production they increase it and throw away any advantage it might have given them.

Perhaps it is just as well. The oil industry would never be safe so long as there were such irresponsibles in the business. Their elimination will remove a weak spot that would always be a danger and a hindrance to progress.

It has been the same in every movement for the stabilization of the industry, whether in production or refining. Responsible companies and operators have been ready to go along in any program for betterment but the obstruction has almost invariably come from the irresponsible lesser fry who had little or nothing at stake and were in the business simply as "lone wolves."

If one result of the present crisis is the elimination of these disturbers the industry will have gained that much. The overproducer and the price cutter have come close to wrecking the oil business. They have no place in any business because they have no idea of the simplest business principles, thinking only of how they may gain a temporary advantage at the expense of the industry.

Yet the history of the industry is not without blame. It has been hard to eradicate the traditional notion of the old-time producer that it was "a game" and that success was measured by the finding of gushers. It has been just as hard to knock the similar notion out of the refiner's head that volume of sales was what counted.

The oil business today is a great integrated industry, supplying a definite demand of modern civilization, and conducted on fundamental business principles which cannot be ignored or set aside by either individual greed or political intermeddling.

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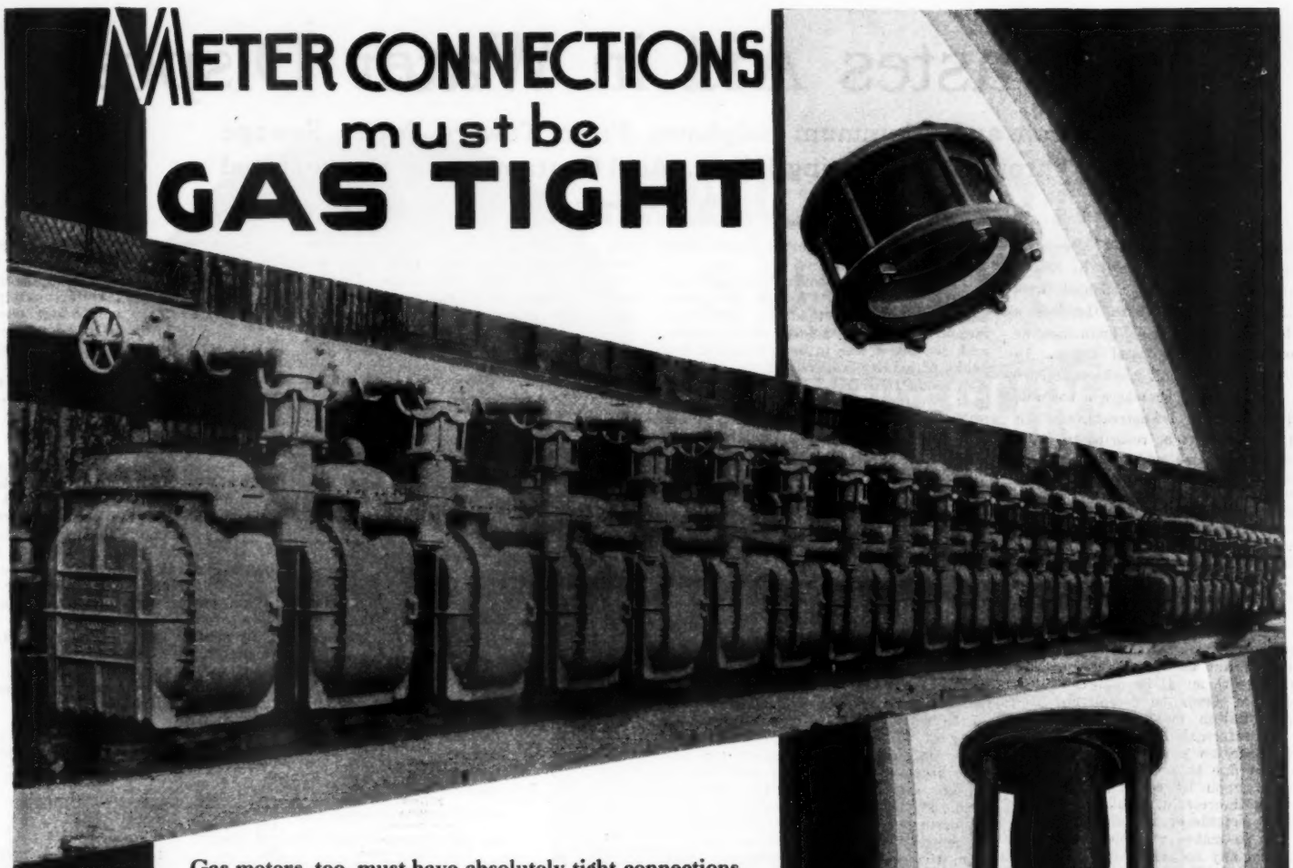

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Clay Wastes Aid in Water Disposal

Iron and Aluminum Sulphates From Towers Purify Sewage Through Coagulating Effect. Acid Contamination Exaggerated

By E. W. Zublin
Texas Pacific Coal & Oil Co.

Refineries that use small quantities relatively of acid (too small to be recovered) are frequently troubled with their disposal. Only where there is a large body of water such quantities as may occur can be dumped safely. In places where only small creeks take care of the waste water, or where a town is located a few miles downstream, neutralization must usually be resorted to. Such practice is expensive aside from the fact that nobody likes to use additional chemicals on waste products.

Some refiners have laid pipe lines to the nearest river of sufficient size, and in some places large ponds are being used that depend upon the rainy season for cleanouts. Such ponds, if large enough have the great advantage of acting as surge tanks that absorb any excessive fluctuation in the reaction of the sewage to either side of the neutral point, in as much as alkaline as well as acid waters may run into them. It is important that seepage from ponds be completely prevented. Pollution must be avoided of nearby wells furnishing water for drinking and irrigation purposes. Complaints of pollution due to seepage usually can be checked upon by coloring the pond water with fluorescein. This green dye is easily detectable even when highly diluted, and so makes possible the detection of most any seepage.

Contact Clays

In refineries where oils are treated with contact clays, spent acid from treating oils can be used to great advantage for treating the clays. Contact clays that require acid treatment for activation contain considerable percentages of acid soluble metal oxides, mostly magnesium, aluminum and iron. The acid used in the treatment is largely converted into a solution of metal sulphates. After completion of the treatment it is drawn off and dumped, preferably into a sump. As most refineries employ caustic in some form or other at some part of the plant, the acid liquid may be partly neutralized in the sump. An excess of caustic over acid will cause part of the aluminum and iron oxides to be precipitated and the precipitate will settle. Lead from doctor solutions will form insoluble lead sulphate which also settles. In consequence the sump will gradually fill up and must be cleaned out at intervals. The size of the pond, relative quantities of acid solution, caustic and doctor solution, determine the frequency of these cleanouts. The settlings contain varied proportions of aluminum, iron, magnesium, lead and some mineral matter, chiefly fine clay particles; they have not found any use as yet. If the lead content is sufficiently high it may pay to recover it. The aluminum can be dissolved in caustic to form sodium aluminate and used for boiler water treatment.

Oil Trap

At the Fort Worth refinery of the Texas Pacific Coal & Oil Co. the acid solution from the clay tank is run into a large concrete pond, which also serves as an oil trap. At times of no clay treats the pond water is slightly alkaline. After an acid dump it may become acid. The pond is drained continuously into a creek of about 1½-mile length, emptying into a river. The creek water, when of acid reaction, may acquire a rather dark reddish brown color due to the dissolved iron, and this has been a source of complaints at various occasions. Spurred by these complaints our laboratory began an investigation of the conditions in the creek as well as the river, particularly, since on one occasion a chemist hired by a complainant had reported a ridiculously high acidity.

The investigation covered two distinctly separate phases: First, it was necessary to find a method for accurately measuring the true acidity of the water; and, second, it was to be determined how peaks of acidity behaved in the creek as well as in the river. The results of this dual investigation showed that the acidity of the creek water never exceeded .1 per cent free sulphuric acid by weight at any time or location, and that the effect of the solution, when mixing with the river water, was of purifying nature.

Testing Acidity

For the determination of the true acidity two possible methods presented themselves. The one consisted of the application of a hydrogen ion tester such as is manufactured by Lamotte, Hellige, Taylor, etc., in which the change of color of a number of indicators is compared to color standards. At the time of the investigation no such testing apparatus was available at our laboratory and it was feared that on account of the brown shade of the water itself the determination of many of the indicator shades would be made impossible. Furthermore the pH scale becomes inaccurate at acid concentrations greater than 0.05 per cent sulphuric acid, a fact which made its application to our problem of doubtful value. Therefore, titration was restorted to.

On titrating solution containing salts of weak acids or bases it is important that the right indicator be used, as different indicators will yield widely different results. In approaching titration problems such as the one under discussion, the theory of indicators should be consulted to aid in the choice of the indicator.

It has been the writer's observation that very many chemists are little versed on this important subject. The theory of indicators may find a number of applications in the oil laboratory. Quite frequently titrations must be carried out under other than standard conditions not listed in text books and therefore a short review of the theory may prove helpful to many in the solution of their problem.

Indicators

Indicators are weak electrolytes, acids or bases. The change of color hinges on the reduction from the electrolytically dissociated to the nondissociated state or vice versa. The law of Ostwald applies to an acid indicator to which the symbol IH is assigned as follows:

$$IH \rightleftharpoons I^- + H^+$$

$$K = \frac{(I^-) \times (H^+)}{(IH)} \qquad (1)$$

In equation (1) the brackets stand for molecular concentrations. K is the constant of the dissociation, characteristic for the electrolyte and a quantitative measure for its strength. It may be concluded from the equation that any change in the concentration of one of the ions will be followed immediately by a change in the opposite direction in the concentration of the other ion. Introduction of an acid, being equivalent to addition of H^+ ions, is followed by a reduction of I^- ions. In as much as there are few I^- ions to begin with because the indicator is a weak acid, the color due to the I^- ions soon will fade out. The more acid the indicator is the more H^+ ions will be required to effect the disappearance of the color caused by I^- ions. Going in the opposite direction, that is introducing a strong base, reduces the concentration of H^+ ions. More I^- ions are formed by way of increased dissociation. It follows that the salt of the acid indicator and the strong base must be strongly dissociated. This is actually the case. Another interesting conclusion is this: The more strongly acid an indicator is the farther in the acid or low pH value range will its change of color occur; and for basic indicators the change of color moves to the side of high pH values with increasing strength. Thus phenolphtalein being a very weak acid turns at pH 7.5 to 7.8, while paranitrophenol, which is a slightly stronger acid, turns at pH 6.1 to 6.7. The basic methylorange changes its color way in the acid range at pH values of around 4; hence, it must be an extremely weak base.

Difficulties will be encountered if one tries to titrate a weak base with a weak acid as an indicator. Salts of weak acids and bases are subject to hydrolysis due to the electrolytic dissociation of the water itself. The constant of hydrolysis H can be calculated from the constants of dissociation of the acid Ka, the base Kb, and that of the water (10^{-14}).

$$H = \frac{10^{-14}}{Ka \times Kb}$$

The smaller Ka and Kb are, the larger is H and the more complete is the hydrolysis. Absence of the indicator salt due to hydrolysis means also absence of indicator ions. Continued addition of weak base will gradually crowd out hydrolysis, causing a slow change in the color of the indicator. Under such circumstances no sharp endpoint of the titration can be obtained. It is necessary to use a basic indicator or else one that is sufficiently acid to prevent an excess of hydrolysis. For instance, ammonia cannot be accurately titrated with phenolphtalein, while paranitrophenol or methylorange produce satisfactory results.

In the case of our acid water we deal with a solution of extremely weak bases, so weak in fact that no acid indicator, even a fairly strong one, can be used. To complicate matters, some of the bases begin to precipitate as the neutral point is approached. Any hydroxyl ions added in excess of the quantity required to reach the initial precipitation point are absorbed to precipitate more base without bringing the solution closer to the neutral point. This continues until all the base capable of being precipitated in that particular pH region has been removed. On titrating the acid solution with phenolphtalein all the aluminum and iron and most of the magnesium must be precipitated before the change to pink can occur. In this manner all the combined acid, such as aluminum and iron sulphate, is measured as free acid. The indicator required in our case should be a base whose turning point occurs at lower pH values than incipient precipitation.

Indicator Selected

The laws governing dissociation indicate that the pH value of incipient precipitation varies with the concentration of the material to be precipitated. It has been our experience that with even the most concentrated solutions from the creek ever received at the laboratory, incipient precipitation does not occur below pH equal to four. Hence, methylorange would be suitable. Unfortunately the brown color of the acid water does not allow the recognition of the change of methylorange from pink to orange, and one of the less common indicators must be resorted to. Brom-phenol blue serves the purpose well. Its transition occurs at pH values of around 4, the color being yellow in acid and blue in alkali solutions.

For the titration a suitable amount of the acid water is weighed into a beaker and an equal amount is placed into another beaker of the same diameter, to serve as a blank. The operation is carried out in the usual manner, a slight shade of purple indicating the neutral point. The blank is necessary for comparison, as the dark color of the water is liable to mask the slight change in shade at the neutral point. Very dark samples are preferably diluted to facilitate titration if accurate results are desired. The influence of the indicator on the results is shown in the following table:

Sample—	Color	Acidity as per cent H_2SO_4 Bromphenol blue	Phenolphtalein	Approximate pH value
1	clear	—.0124	.082	12.3
2	light	—.0079	.028	11.2
3	light	neutral	.116	4
4	yellow	+.0160	.362	2.5
5	yellow	.0187	.239	2.4
6	light brown	.028	.356	2.2
7	dark brown	.043	.876	2.1
8	very dark brown	.087	1.751	1.75

Note—Negative acidity stands for alkalinity (per cent KOH) calculated from acidity found with bromphenol blue. These samples were taken at different times from the creek as it leaves the pond.

Action of Acid Water

Having arrived at a very simple way requiring no expensive apparatus to determine the true acidity of the acid solution resulting from acid treatment of clays, it remains to be seen how much harm such a solution is likely to cause. It is evident that there is no general answer to the second problem, as every case requires individual consideration. Much depends upon the quantity and nature of the water available for flushing, presence of other industries that empty their sewage into the same body of water, and so on.

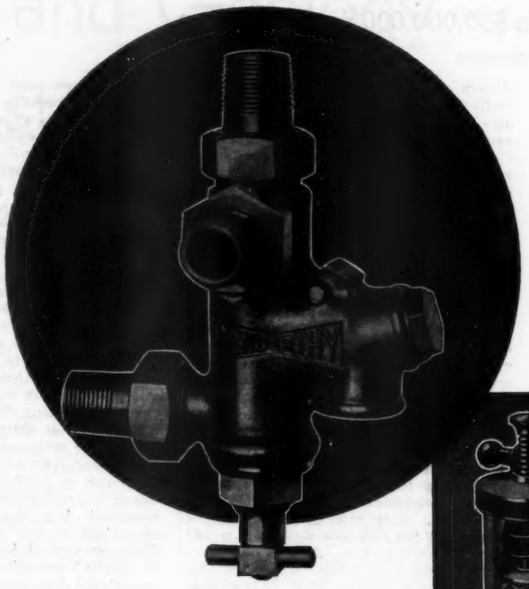
At the Fort Worth refinery of the Texas Pacific Coal & Oil Co., conditions are rather favorable. As mentioned before, the water runs down a creek of about 1½ miles length into a fork of the Trinity River. The peak of an acid wave reaches the mouth of the creek about six to eight hours after leaving the refinery. As the acid wave gradually proceeds downward, it decreases in intensity, the acid water gradually mixing with left-over alkaline water. It was found that normally the maximum acidity at the mouth of the creek is less than one-third of the maximum acidity just outside the refinery.

River Water

The river water is usually quite heavily polluted with drainings from a number of packing houses. Its reaction is alkaline. The iron and aluminum sulphate of the refinery water have a strongly coagulating effect on suspended matter of both organic and inorganic nature. The alkalinity of the river renders the creek water neutral to bromphenol blue even at times of acid peaks. All or part of the aluminum and iron are precipitated, leaving a clear water after settling.

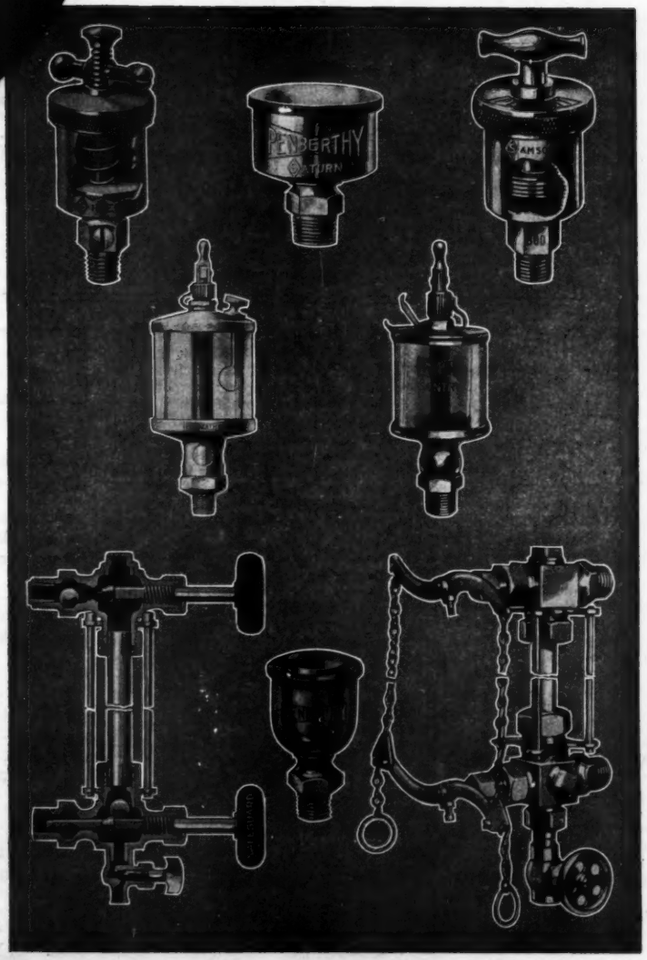
Samples taken about 200 feet down the river from the mouth of the creek at a place of little current showed the water to be practically free from fine suspended matter at times of acid condition in the creek, while upstream the water was muddy. Even better purifica-

(Continued on Page 132)



ECONOMY SUGGESTS

PENBERTHY PRODUCTS



THE fact that such a large number of operating organizations in the "Close Buyer" class have for years used only these injectors, liquid level gages and lubricating devices, is significant of the fundamental economy of Penberthy Products.

These Penberthy Products are cast from new brass . . . not made from spun or stamped brass. The design and workmanship allow for the rough handling that is probable.

Penberthy Products are carried in stock by supply companies everywhere.

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DETROIT

ESTABLISHED IN 1886 CANADIAN PLANT, WINDSOR, ONT.

Salt Water Disposal Costly Problem

East Texas Operators Confronted With Expenditure of From $18,000,000 to $30,000,000 for Pipe Line

By L. E. Bredberg

There are many operators in the East Texas fields who have not yet given much thought to the salt water situation which will eventually grow to enormous proportions as the fields are drilled up. Some wells were drilled too deep and have encountered the water sands, and water from the western edge of the producing area continues to advance into the sands, showing up in other wells. But there are other more serious thinking and more far-sighted operators and company men who have taken the problem under study, and for the past two months have been giving due consideration to present conditions in the field, with the idea of planning some definite method for the disposal of the several millions of barrels of salt water which will ultimately be produced along with the oil.

It has been estimated by geologists and engineers who have given consideration to the amount of salt water which might be expected to be produced in the field along with the oil that there will be 10,000,000,000 bbls. of water with the 1,500,000,000 bbls. of oil, using figures of other Woodbine sand fields as a basis for such estimates. On a basis of 1,000,000 bbls. of salt water per day in the district, a 72-inch redwood pipe line, 200 miles long, laid from the district to the Gulf Coast, would cost in the neighborhood of $18,000,000. This includes pumping stations, but does not include survey, right of way, or any damages which would perhaps accrue along the line. The same length of line built of 48-inch cast iron pipe would cost around $30,000,000. With oil selling from 10 to 20 cents per barrel in the district, as at the present time, such added production costs would be impossible to meet without concurrent losses to all the producers interested in the project.

But some method of disposal has to be adopted, consequently the engineers studying the situation are figuring on several methods, hoping to find a cheaper and just as efficient method as the two most feasible at the present time. The two most feasible are believed to be the pipe line to the coast, and natural drainage with limited storage.

Natural Drainage Proposal

The latter plan has been considered, but it has too many disadvantages. The Sabine River would be the stream used in carrying the large volumes of salt water, and as this stream flows into Louisiana and then back into Texas, making an interstate problem, objections would no doubt be brought by that State against the operators in Texas. Towns along the river could also be expected to raise their voices against contamination of their water supply. This objection, however, might be overcome by the producers contracting to drill deep water wells for the water supplies of the towns. Even the sea water would become contaminated by the salt water from the fields, for such water is of considerably higher saline content than sea water, consequently would contaminate the latter.

Farmers near the mouth of the Sabine would also be expected to object to such a method, for the salt water would possibly be flooded into their rice fields, ruining them. This objection might be overcome by the companies storing the salt water from their wells about the first of February in order to afford the river an opportunity to flush out the salt water accumulations prior to the opening of the irrigation season. This would require storage for at least seven months, with loss through exaporation being negligible due to the yearly amount of rainfall in the district. Cost of reservoirs for storage during the irrigation season would run in neighborhood of $6,000,000 to $9,000,000. Such storage would have a capacity of 257,000 bbls. daily and would cover 33,000-acre feet. A field gathering system used in gathering water for this system would cost at least $10,000,000. a cost which would also have to be borne by the producers in case a redwood or cast-iron line was built to the coast. Connections with the wells or storage tanks, small pumps and other necessary expenses would add to the cost of producing the wells, items which are now overlooked in drilling the wells so rapidly in order to get the oil and sell it for any price to obtain ready cash as in the case with many operators at present.

Another method of salt water disposal has been considered impossible. This method is to return the water to the edge wells, or wells which have gone off production, but according to geologists this plan can not be used in East Texas due to the static head and lightness of the formations in the district. Lack of sand and necessity of filtering the water before returning to wells is another argument against this plan. One company official is of the opinion that it can be done if sufficient pressure is used.

Unit Operation Plan

Pressure maintenance on face of sands in all producing wells for the purpose of obtaining a uniform encroachment of water is another system which has been discussed, but this would require the equivalent of unit operation for success. However several blocks of acreage may be unitized according to plans now being formulated by some of the major producing companies operating in East Texas, and if such blocks are unitized pressure maintenance will probably be

(Continued on Page 131)

MAGNETIC STORM

Tucson, Ariz., United States Coast and Geodetic Survey observatory reports that a severe magnetic storm started at 6 p. m., central standard time, August 8 and continues at time of going to press. Its telegram is as follows:

"Storm began eighth. Zero. Severe."

Late Fields

KANSAS

Kansas refiners are planning to use East Texas oil because of the increasing scarcity of Kansas crude. It is reported that East Texas oil is being shipped to certain refineries by tank cars. The estimated cost is greater than the posted price of Kansas oil. Kansas crude oil is given preference and the demand for crude was increasing.

Mid-Kansas Oil & Gas Co.'s No. 1 Unruh, SE cor. SW, Section 25-19-2w, on the west side of the Ritz-Canton Field, McPherson County, was completed for 1,726 bbls. of oil a day from the Viola lime at 3,387-97 feet.

Lario Oil & Gas Co.'s No. 2 Suffield, SW cor. SE, Section 25-19-2w, the east offset to the Mid-Kansas Oil & Gas Co.'s well, was completed and made 1,243 bbls. of oil the first 24 hours. The production was found in the Viola at 3,384-94 feet.

On the east side of the Decker gas area, McPherson Oil & Gas Co. and Shell Petroleum Corp.'s No. 2 Lovett, C SW NW, Section 13-19-2w, was completed for 10,750,000 feet of gas a day from the chat at 2,900-40 feet.

A recently completed gas well in the northeastern part of the Ritz-Canton Pool increased its gas flow. United Petroleum Corp. and others' No. 1 Shaw, NW cor. SW, Section 21-19-1w, now has an open flow of 52,250,000 feet of gas a day. A new gauge was taken. No effort is to be made to recover the tools lost in the hole recently. Some express the opinion if the tools were recovered the gas would increase to 60,000,000 feet a day.

The location for the second townsite test at Canton was announced during the week by Jones and others' No. 1 Altman, in Block 1, Section 21-19-1w.

Olsen Drilling Co.'s No. 3 Koehn, NE cor. SW NE, Section 36-19-2w, gauged 385 bbls. of oil in 12 hours from the Viola lime. It was given a potential rating of 370 bbls. of oil a day.

J. R. Robertson's No. 1 Rainey, in Section 3-21-6w, in the Welch Pool, in southeastern Rice County, was drilled to a total depth of 3,468 feet. A showing of oil was found in the chat at 3,415-25 feet, estimated at 50 bbls. a day. After drilling deeper the water showed in the hole.

The wildcat test in Rush County was drilled deeper and it may be again deepened. Dewey & Mitchell and others' No. 1 Greenawalt, C SW, Section 17-19-16w, filled up with oil from a horizon found at 3,820-38 feet. It was drilled to 3,859 feet in a formation that resembles the reworked dolomite. The owners estimate the well to be 125 bbls. a day after a short swabbing test. It is to be drilled deeper in an attempt to identify the formation.

OKLAHOMA

Governor Murray's shutdown order has extended to all the prorated fields in the state and all the fields were quiet Monday morning, with no infractions of the rules. One officer and one enlisted man will supervise Greater Seminole area. Three officers and eight enlisted men will supervise the Oklahoma City field. All other enlisted men and officers were withdrawn.

In the Oklahoma City field Umpire Otto Bradford will continue to keep a check on the field operations in handling exempted wells.

In the Greater Seminole area the production of the field at 7 a. m., Monday, was 61,538 bbls. of oil from 1,533 wells. This did not include the Allen field. The normal production under proration in the same area is approximately 150,000 bbls. a day. The only wells producing in the area were the wells classified as strippers, making 25 bbls. a day or less, and wells that have been exempted because they make water.

The Beebe Pool, in Pontotoc County, may yield another Wilcox sand well. Stanolind Oil & Gas Co.'s No. 2 Roberts, NE cor. SW NE, Section 32-5-5, swabbed 132 bbls. of oil in 12 hours after it had been shot twice with 40 quarts each. The first shot was placed at 2,451-78 feet and the second at 2,503-23 feet. The total depth of the well is 2,530 feet, in the Simpson sand. The well will be drilled to the Wilcox sand. The same company's other Wilcox sand well encountered water and was plugged back. Stanolind Oil & Gas Co.'s No. 1 Burke, NW cor. SE, Section 32-5-5, encountered

(Continued on Page 136)

High Spots in Field News

KANSAS

Production in Kansas may be shut down, commission says, unless oil goes to 60 cents. Ritz-Canton allowable increased.

CALIFORNIA

Sharkey gas conservation measure may go to referendum at November election instead of waiting until next year.

OKLAHOMA

Effect of shutdown slight owing to larger production earlier in the week. Drop to 260,000 bbls. daily looked for this week.

SOUTHWEST TEXAS

Goliad County test not so encouraging. More locations in northeast section of Balcones fault zone south of Brazos River.

NORTH LOUISIANA-ARKANSAS

Operating companies seek curtailment agreement from land owners. Only four completions, two gas wells and two dry holes.

GULF COAST

Prolific sand found at Barbers Hill. Good well at Lake Barre. Third gas sand in Victoria test. Leesville well, deepened, increases.

ROCKY MOUNTAIN AREA

New operations on Greasewood Dome, Weld County, Colorado. Good well in Osage Field, Wyoming. Hobbs, N. Mex., lauds Murray.

WEST TEXAS, NORTH TEXAS AND PANHANDLE

Schleicher County wildcat makes some oil. New well in Upton County. Deep Development Co. well in Archer County encounters another deep pay. Conditions in Panhandle look better.

EAST TEXAS

Increase of 73 producers during week, making total 1,468. Production rises to almost 655,000 bbls., while distribution also gains. Western limits of Gladewater area indicated by dry hole.

History of Development and Geology of East Texas Fields

* * * * * *

The area now referred to as the East Texas fields or the East Texas rim pools, covers a large portion of the western halves of Rusk and Gregg Counties, and extends over to the west from Rusk into Smith County, and on the north into Upshur County which adjoins Gregg County. The field is approximately 40 miles in length from south to north, and about 7½ miles from east to west at its northern end in Gregg and Upshur Counties, narrowing to about 3 miles wide in along the Rusk-Gregg County line and then again widening to about 4½ miles in the southern portion in Rusk and Smith Counties.

The field was first opened by the discovery well drilled by C. M. Joiner in what is known now as the Joiner Pool, northwest of the town of Henderson in Rusk County. This discovery well was located at what afterward proved to be the extreme eastern edge of the pool for the east and northeast offset wells were dry and the south offset had only a small showing of oil.

The discovery well in the Joiner area was completed September 8, 1930, and because of the showing secured in its offsets did not create a very favorable impression upon the geologists and oil men and the major companies did not make any extensive purchases of acreage in that vicinity at that time.

Following the Joiner well which opened the south end of the field, the well drilled by Ed Bateman and known as No. 1 Crim was completed in December, 1930, and it opened the center part of the field. This was followed January 26, 1931, by the bringing in of Moncrief-Farrell's No. 1 Lathrop in Gregg County. These three wells are spaced over about 24 miles north and south and were all drilled near the eastern part of the field although the two northern wells were not as close to the east edge as the Joiner well.

Bateman No. 1 Crim and Moncrief-Farrell's No. 1 Lathrop were both about 10,000-bbl. producers, while the Joiner well was a small producer, but all wells had a good grade of paraffin base oil of about 38 to 40 degrees gravity.

Following the bringing in of the Joiner well there was active buying of acreage by royalty men and independent operators, and many company men were on the ground but the purchases of the larger companies was limited at first because of the showing made and the history of the region.

Prior to the completion of this first well as a producer many tests had been made in the area without success and surface work done by geologists for the major companies had never been very encouraging for the area lacks surface indications of the underground oil deposits. It has long been known that the Sabine uplift, over the west edge of which this pool lies, was productive of oil from sands lying above it, but those fields are all on the eastern side of the uplift in Louisiana and extend from Caddo and Pine Island on the north to Zwolle on the south and it took over 25 years of exploratory work to discover them. None of these pools produces from the Woodbine sand, the producing formation in the East Texas Field, and while the Woodbine has produced in the Fault line fields of Central Texas it has usually been a water sand in the other portions of the State where encountered.

Leasing More Active

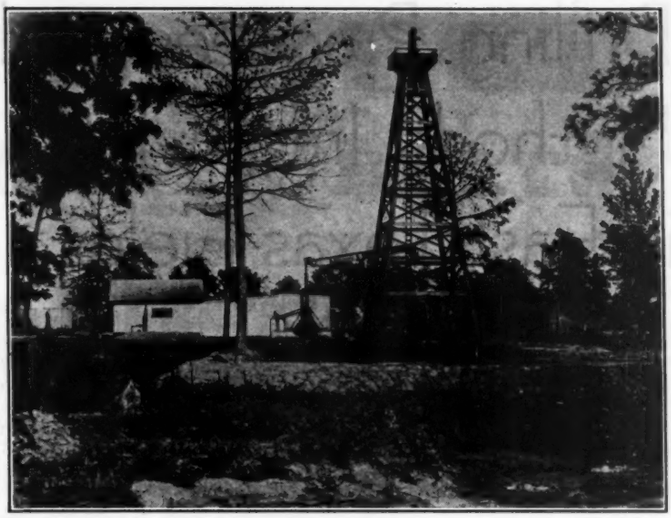
As the other wells were completed and made much better showings of oil and the geologists began to work out some of the geology of the region from logs of wells drilled after the Joiner discovery, it became evident that this was probably an oil field of large magnitude and the scramble for acreage became acute and many leases changed hands. In this way the larger companies got into the play.

However, many independent operators

(Continued on Page 106)

COMPILED BY STAFF

The articles in this issue of The Oil and Gas Journal covering various phases of the activities in East Texas, the requirements of that area and its future possibilities and needs, were written by L. G. E. Bignell, petroleum engineering editor of The Oil and Gas Journal, after a personal investigation of all the fields, and by L. E. Bredberg, manager of the Fort Worth Bureau of The Oil and Gas Journal, who devotes most of his time to East Texas. The illustrations were taken by R. B. Ward, staff photographer of The Oil and Gas Journal.



Typical scene in the area west of Joiner discovery well in Henderson district, East Texas oil field.

* *

Portion of Henderson district in East Texas Field developed during the early part of the boom.

Drilling Practices and Methods Improving in East Texas Fields

* * * * * *

Following the common practice in Texas, the wells in the new East Texas fields have all been drilled and completed with rotary tools. The discovery well, drilled by C. M. Joiner and known as No. 3 Bradford in the Juan Ximenes Survey in Rusk County about 9 miles northwest of the town of Henderson, Tex., was completed with rotary tools after two other tests had been abandoned. The first well, located northeast of the discovery well, was abandoned at 1,098 feet because of a bad fishing job and the second test was reported as dry at 2,518 feet where it bottomed in black shale in June 1930.

The third and discovery well was completed at a depth of 3,594 feet and tested through the drill stem on September 8, 1930, for a small show of 38 gravity paraffin base oil and this started the play in that area.

In as much as very little acreage in the vicinity of the discovery well was owned by the larger oil companies and the showing was not of sufficient importance to cause the executives to indulge in a mad scramble for leases, a large part of the first drilling was done by independent operators, many of them new to the oil business and operating with small capital and any equipment available.

As soon as this area began to create interest outside of the district in which the three pioneer wells were drilled there was a rush for leases in the whole country and everyone in the industry seemed to be on the ground at one time or another.

Drilling contractors, with their outfits stacked up in other fields, quickly moved into the district and were put to work, many of them joining with the lease owner upon a partnership basis and agreeing to drill for such money as the lease owner could spare and take the balance out in oil produced from the wells after completion.

* * *

In this mad scramble anything that would make hole was used and rotary equipment of all kinds moved in to the location and haste was the order of the day. As there was an ample supply of lumber in the vicinity of the test cut from the woods of that area most of the early derricks were made from it and were 96 and 122 feet high.

There was a considerable lapse in time between the completion of C. M. Joiner's No. 3 Bradford and the start of an active drilling campaign in this area, but when Bateman and others' No. 1 Crim and Montcrieff-Farrell's No. 1 Lathrop were completed as 10,000-bbl. producers the rush was on in earnest and equipment of all kinds in demand.

Drilling Practice

As more was known about the formations and character of production to be encountered in this area it was general practice to start with a 12½ or 15-inch hole at the surface and set and cement about 250 feet of 10½ or 12½-inch pipe.

As soon as the cement sets around this surface string it is usual practice to drill an 11-inch hole where the 12½-inch pipe has been used, or a 9-inch hole where the 10½-inch surface casing is run, and this size hole continued to the top of the pay formation or through the Austin chalk which lies directly above the Eagle Ford and Woodbine pay. Casing of 6⅝ and 7-inch is set and cemented and the wells are then finished.

Many in their haste failed to take cores of the sand and simply drilled in for what the driller considered a sufficient depth and after setting liner and 2½ or 3-inch tubing the wells were washed or bailed in. Good practice requires that the producing sand be carefully cored and that the amount of formation drilled be limited to only the upper portion of the pay.

As a result of the hurry-up methods of the early days in the south portion of this field many wells have since gone to water and are now dead. In the Henderson district 46 such dead wells were reported as of July 16.

Even the larger companies had to learn something about drilling in this area but they were quick to recognize the need of using extreme care in completing their wells and many companies core ahead carefully when the last string of casing has been set and usually drill in only about 10 feet.

Water level for the field has been established at about 3,315 feet below sea level datum, but this will vary in some portions of the field so the only safe way to complete the well to be certain that the hole is not drilled too deep is to core before finishing.

Coring has many other advantages because a study of the sand will determine its general characteristics and as the porosity has been found to vary from well to well upon the same lease it is felt by all good operators that too much care cannot be taken in securing good representative sections of the producing sands.

In some portions of the field it has been found that the bottom of the hole will pass through alternating layers or stratas of shale and sand, indicating that the sand bodies from which the oil is to be secured are probably lenticular in shape and surrounded by shales. In such wells it is usual practice to set perforated liners opposite the sand members and solid liner opposite the shale.

Tubing Run to Complete Well

After the bottom of the hole has been drilled into the pay and the liners set the next operation is to run a string of either 2½ or 3-inch tubing. This tubing is suspended in tubing heads at the top of the hole and there has been an active demand for that type of equipment. Operators not experienced with this type of production have in many cases completed the wells with simple type christmas trees without master gates on the tubing and in some cases the wells have come in out of control and fires followed.

The more experienced type of production men are now equipping their wells with approved design of tubing head and setting above it a master gate of sufficient capacity to hold the well under control whenever it is necessary to close it in. Above the master gate they rig up several types of christmas trees with chokes and control valves and the design of these heads vary over a wide range depending upon the experience of the operator.

Many of the wells have been produced through eleven-sixteenths-inch chokes set in the flow line at the surface and in this way building up a back pressure on the well which has aided in controlling the gas-oil ratio as well as holding back both bottom and edge water.

On well designed heads there is always placed a pressure gauge giving the casinghead pressure and it has been found that this will range from 200 to 400 pounds. The static head of oil in the well is about 1,200 pounds so the bottom hole pressure has been estimated at about 1,550 pounds.

So long as there is a differential pressure at the well head of above 100 pounds the well will flow and it is the usual practice of the district to produce them into oil and gas separators working under low pressures. From the separators the oil goes to stock tanks on the lease and most of the gas is burned in open flares. The size of these flares are good indicators as to the manner in which the operators are producing their wells, for the more oil that is being made the larger the flambeau alongside the well.

Steam Chief Motive Power

Steam has been used as motive power for most of the rotary operations in this field but the Humble Oil & Refining Co. has drilled three of its wells with an Oil Well electric outfit using Hild drive. It is reported that this same outfit was moved up from the Salt Flat country where it had already drilled about 10 wells.

Water was secured during the winter months from streams near the wells or from ponds but as the summer season advanced these sources dried up and it was necessary to shut down a number of operations because of shortage of water. To make up for this shortage of surface water many wells have been dug varying from 250 to 800 feet in depth. They are pumped with all kinds of outfits from small pump jacks driven by gasoline engines to electric motor driven centrifugal pumps.

The rotary equipment at first was mostly used outfits from other fields and ranged in size from small units such as used on the Gulf Coast and in Arkansas and Louisiana, to the large heavy duty type rotaries and pumps from the Oklahoma City Field. Two and three boilers were set up at the location. Disc bits were used in drilling to the Pecan Gap formation and sometimes to as deep as

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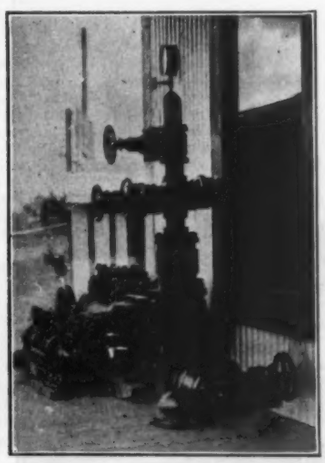
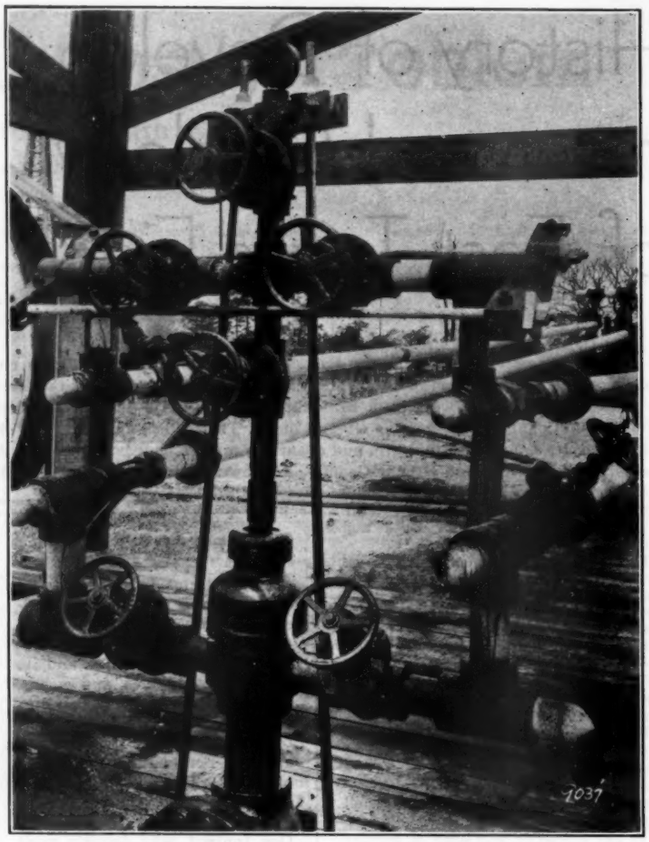


Christmas tree with master gate and tubing head used in East Texas oil fields.



Chistmas tree on East Texas oil field well.

* * * * * * * *

THIS NEW BELT OUTWORE 5 OTHER BELTS

AND IT'S STILL ON THE JOB

On one of the hardest wells in the Tonkawa field—a 4,000 foot well, 560 bbl. daily production—five pumping belts were used in one year, the best of which lasted 150 days. A Goodyear COMPASS Cord Oil Well Belt, single, was applied, giving 235 days of service. Then the new COMPASS Cord Oil Well Belt DOUBLE—was put on, and, up to March 15, 1931, had been in service for 325 twenty-four-hour days! It has lasted more than twice as long as a field of carefully selected drive belts, and it is still on the job!

This stout belt is a new development from the well-known Goodyear COMPASS Cord Oil Well Belt. But instead of one layer of cords it has two, one on top of the other. The cords are toughly embedded in rubber, forming a firm double-shock-proof driving core. Just as in the famous single layer belt a heavy fabric envelope encloses and protects the cords from the grind of the pulleys. The cords take the shocks and punishment of the drive. The envelope guards the cords against pulley wear.

You can save money on your costly deep-well drives with COMPASS DOUBLE. Let the G.T.M.—Goodyear Technical Man—tell you more about this latest Goodyear development—and other Goodyear rubber equipment for oil field service. Just write to Goodyear, Akron, Ohio, or Los Angeles, California, and ask him to call.

THE GREATEST NAME IN RUBBER

GOODYEAR

BELTS • MOLDED GOODS • HOSE • PACKING

Numerous Pumping Problems Will be Encountered in East Texas

* * * * * *

It has been recognized for some time by the production men and petroleum engineers operating properties in the fields of East Texas that it will be necessary to pump some of these wells comparatively early in their life if the oil is to be secured without drawing water into the producing formation and injuring them permanently. This statement should be qualified to some extent because the sand conditions in the western and eastern portions of the field will vary, as the relative position of water and oil is higher on the west than on the east edge of the area.

It has been found that the producing sands have a west dip of about 50 feet per mile in the center of the field, or the Kilgore district, and in both the northern and southern areas the dip is about 40 feet per mile. The narrowest portion of the field is in the Kilgore district and at this time this is the most prolific producing area, probably due to this condition of greater dip, sand porosity and close proximity of water to the oil in the formation at its western edge.

Contours of the sands worked out from logs of many wells show that the Kilgore district is over what was perhaps a bay in the old Cretaceous sea as a cross section north and south indicates a greater depth for the producing formation in the central portion of the field in the region of the Kilgore district. The northern and southern ends of the field are at approximately the same level below the sea level datum line.

This troughing effect of the sands has also been found to exist in some portions of the southern or Henderson district where the drill has disclosed the fact that there are long narrow ridges running out from the old shore line toward the west and between these ridges, which are not of great height, there are found old troughs or valleys now filled with sandy shales and not very productive of oil and gas.

It is quite possible that these fingers or ridges may have been due to local conditions that existed in the old sea when the now producing sands were laid down and they undoubtedly had their effect upon the distribution of the sands and muds washed down from the Sabine land mass to the east and up from the old sea bottom. These conditions are now making stratigraphic changes that may occur from location to location and also

* * *

tend to produce sand lenses completely surrounded by shales.

It has also been found that there is a red bed between the upper and lower sand lenses. In the upper or Gladewater portion of the field the production is coming from the lower sands below this red bed.

Water Conditions

Geologists are now using the 3,315 or 3,320 feet below sea level datum as the water level for this whole pool, although there has been some variation in this level at some wells, probably due to separate lenses having different water levels or to local uplifts since the accumulation occurred.

In the western portion, or down dip from the old shore line, it has been found that the water is very close to the oil and therefore the wells there must be produced with great care if water encroachment is to be retarded.

The field might be divided into three north-south zones; the west zone referred to above where oil movement is probably largely due to the hydrostatic pressure of the water lying in the Woodbine to the west of the field; a center zone occupying about one-third of the field's width and lying to the east of the hydrostatic zone

Gas engine driven pumping outfit on W. B. Hamilton's No. 1 Camp, and through rod line and swing also pumping No. 2 well.

* * * * * * * *

where the oil movement is due to a combination of water and gas pressure, and the third zone to the extreme east edge of the field where the oil has been entrapped and driven up structure against the contact between the producing sand and the Georgetown limestone forming the cap rock of the Sabine uplift.

From the evidence now at hand it would seem that the center zone will yield the greatest amount of production in a natural manner for the gas entrapped in the oil makes it more viscous and with the water pressure behind it the oil will move through the sands more freely to the wells than it will in either the extreme western or eastern horizons. However, it has been found that care must be exercised in producing wells in this middle zone, as in the west area, or water will come in the sand and cut off oil production.

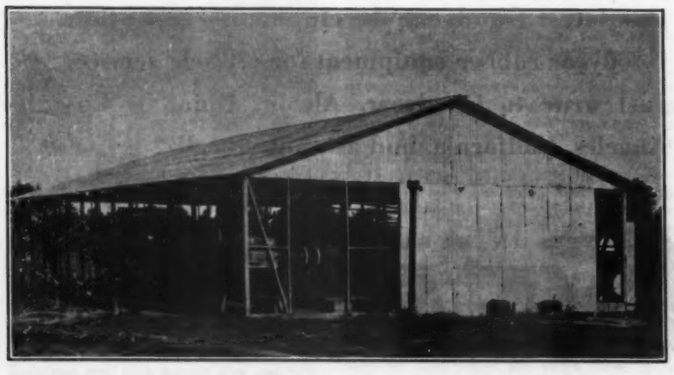
It is now thought that little water will be encountered in the eastern strip that is adjacent to the Georgetown lime and the movement of oil will be due to gas pressure. If this gas is not conserved wells will quickly go dead and must be put on the pump, and this fact has been established by many wells having gone dead already. It may be that later, as water moves up dip through the western and central part of the structure, the water drive will reach this eastern zone and cause more oil to be flushed from the sands, but when such flushing action will start will depend largely upon the control of the water movement in the central and western zones.

Rate of Water Movement

There has been some attempt made to estimate rate of water movement from west to east through the Woodbine formation based upon known conditions in other fields of this same general type, and, while it is difficult at this time to give any accurate figures, one estimate places the average well capacity at about 200 bbls. per day if the movement of oil is to be slow enough to permit the water to gradually move up dip and thoroughly flush the sands.

Other estimates have been based upon quantity of oil to be moved to regulate migration of salt water from west to east at the rate desired to recover the major portion of the oil but there are so many variables entering into this problem that it hardly seems possible at this

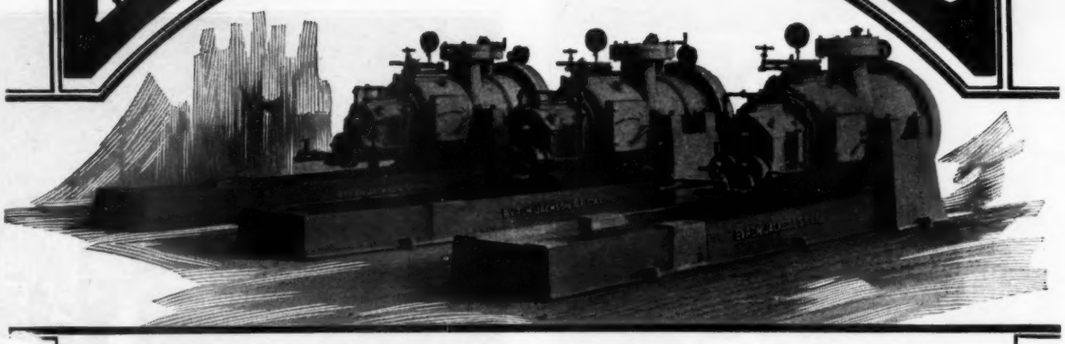
* * * * * * * *



Air lift pumping plant on H. L. Hunt's property in Joiner area, East Texas fields pumping two wells without offsets.

Air lift well with compressor station in background on H. L. Hunt's property, East Texas Field.

HOT OIL CHARGING PUMPS



THIS group of Byron Jackson high pressure, high temperature pumps was installed by one of the major oil companies for charging cracking stills. The pumps, steam turbine driven, have capacities of 125 GPM to 225 GPM of oil at 800° F. at operating pressures ranging from 800 to 1400 pounds per square inch. Safety, simplicity and dependability are the outstanding features. The duty is continuous, the operation of the whole cracking unit depending on uninterrupted service by this equipment. A notable feature is the one stuffing box, totally enclosed and equipped with external handwheel control and steam smothering connections. This is a special Byron Jackson safety development to protect operators from injury by flash. There is no failure of this device of record.

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time to give any accurate figures based upon this method of making estimates.

In as much as the water front extends over a line more than 40 miles long on the west edge of the field, and in many places water may be found below as well as at the edge of the wells it would require an enormous amount of oil to be produced to perceptibly raise the water level throughout the whole producing formation.

But as there has been no uniform drilling program followed, and oil has been produced in varying quantities from these west zone wells, it seems quite likely that water will come in them long before the general water level is raised to any measurable extent. In some parts of the field water is already higher in the structure than in others and this will have its influence upon future production of oil.

Forty-horsepower 2 cycle gas engine pumping a well on Haines Drilling Co.'s lease in Joiner Pool, East Texas.

Pumping Equipment Being Installed

That the operators in all parts of the field and in each of the three north and south zones are anticipating the necessity of pumping their wells soon is made evident by the fact that in every district wells are already standardized for pumping and in the Henderson district, or the southern portion of the field, many of them are actually on the pump now. In the July 30 issue of The Oil and Gas Journal, L. E. Bredberg lists the wells in the Henderson area that are pumping, being agitated or are dead and they total 77 in all. In the Kilgore district three pumping wells are reported and in the Longview district at the north end of the field many wells have been standardized but so far as known none are actually being pumped at this time.

The pumping equipment being installed is of every kind, from old steam engine and boiler outfits used on some wells in the Joiner Pool to the latest type electric driven powers and pumping units. Installations have varied largely with the ability of the company making them to pay for the equipment and it has been reported that some have been equipped with old rig irons and fronts and paid for by assigning a portion of the oil to be produced to the dealer in machinery who supplied the outfit.

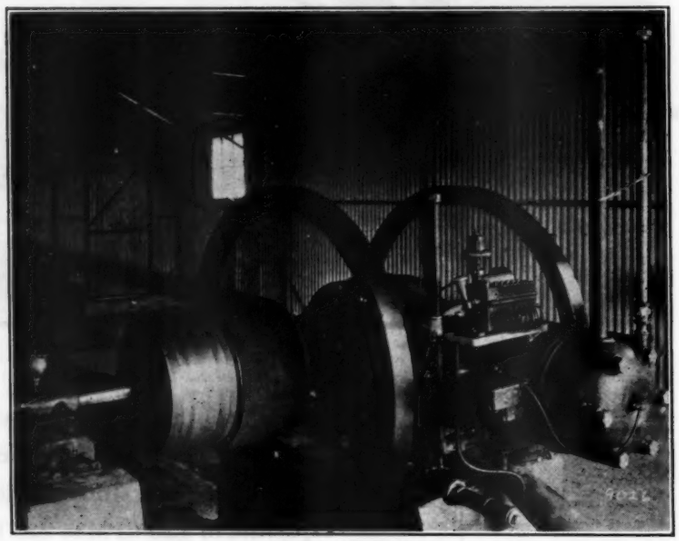
This is an exceptional case, however, for with the larger companies rapidly acquiring the major portion of the productive acreage all production problems are being referred to the engineering and producing departments for careful study and only the best types of apparatus will be used.

There seems to be a rather wide variation in estimates of power needed to pump these wells for the depth of only about 3,500 feet would indicate that small power units should give satisfaction but in many instances from 40 to 55 horsepower units have been installed. This probably is due to the anticipated later need for large enough outfits to handle great quantities of water as it has been estimated that these wells will later make from 10 to 15 bbls. of salt water per barrel of oil produced.

Electric Power Available

The power companies serving this area have strung high voltage lines into all parts of the field and this type of power will be made available at satisfactory rates for all purposes.

One of the early electric motor driven installations was a central power on the H. L. Hunt-Ashby lease in the Henderson district which is capable of handling 12 deep wells. At the present it is pulling seven wells, five of which are tubed to the bottom with 2½-inch tubing, four equipped with five-eighths inch rods and three with three-fourths inch rods, and all pumped with 42-inch stroke on jacks. The length of the pull rods average 1,440 feet, the shortest being 480 feet and the longest 3,640 feet from the power. The unit is equipped with a 75 horsepower 900 r.p.m. motor and, according to Yates Hunt, superintendent for the property, it costs less than $50 per well per month to operate.



Fifty-horsepower pumping engine used in East Texas fields.

Motor-driven pumping units are being installed on many leases and they are of the latest type with reducing gears and so mounted as to permit of being set upon one common cement foundation. These power units operate the standard type walking beam with steel rig front and will be driven at a speed of from 25 to 30 strokes per minute, the length of stroke being about 24 inches.

Another type of prime mover that seems to be having a good deal of consideration in this field is the oil engine of the Diesel type and some of these units have already been installed in the Kilgore district upon wells made ready to pump as soon as the natural flowing pressures drop below 1,200 pounds per square inch at the well head.

One company has installed a 55 horsepower 12x15 single cylinder two-cycle solid injection Diesel engine on Cranfill-Reynolds company's No. 1 J. M. Blackman well in the Kilgore Field together with an all-steel front and herringbone reduction gears. This well is made ready in every detail for pumping as soon as the natural flow period ceases. This fuel oil engine has a guaranteed fuel consumption of 0.43 pound of oil per horsepower hour at full load.

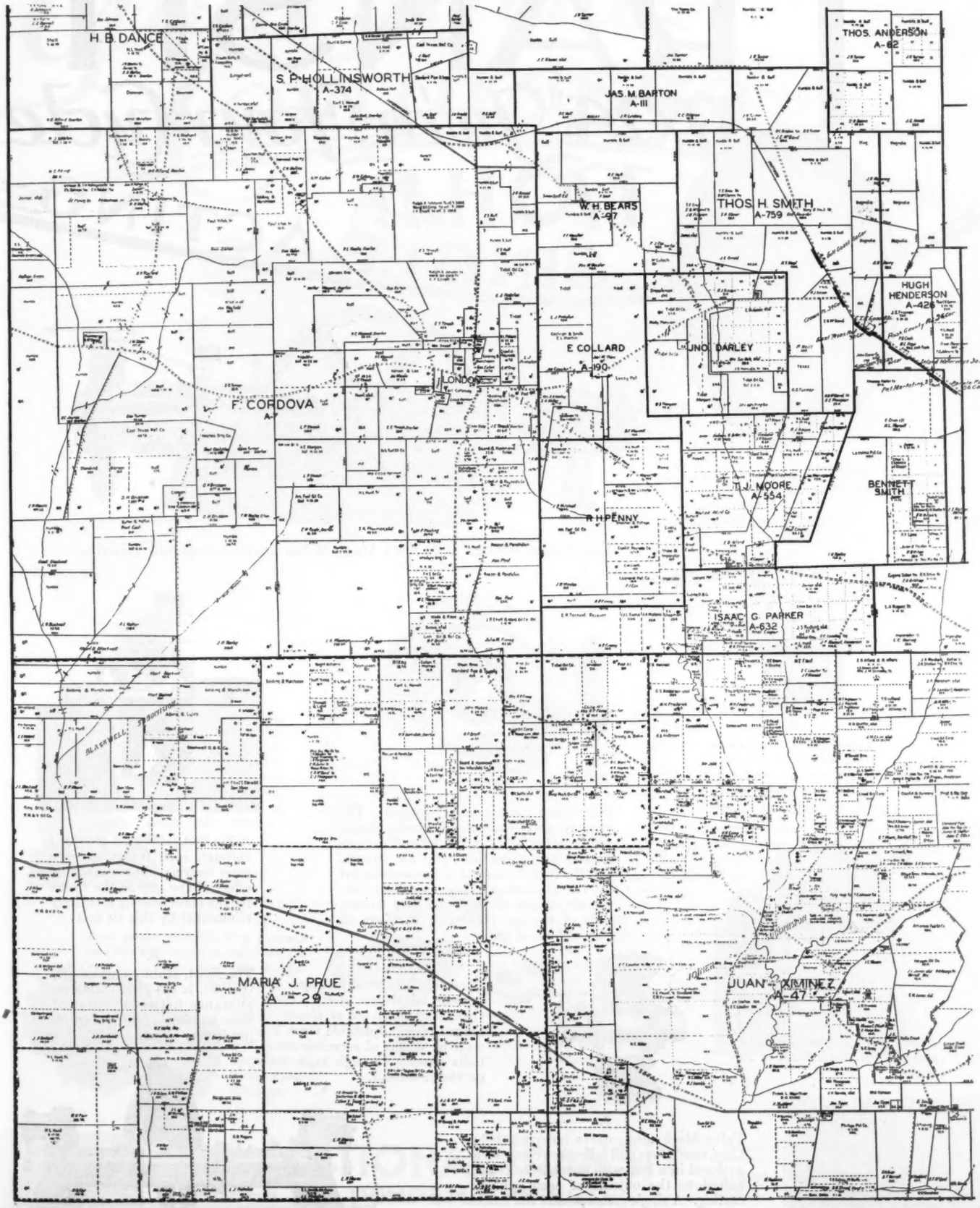
Another type of engine that is to be used for pumping in the East Texas fields is the gas engine built in several sizes and manufactured by several companies. This type engine is readily convertible from gas to oil burning at small expense and with little delay. Some of these machines have already been in-

(Continued on Page 138)

Electric driven central power unit on H. L. Hunt Co.'s lease, Joiner Pool, Rusk County, East Texas, driven by 75-horsepower motor, and pumping seven wells.

Seventy-five-horsepower 900 r.p.m. alternating current motor used to drive central power on H. L. Hunt's Ashby lease in the Joiner Pool, East Texas.

Map of the Joiner Area in East Texas



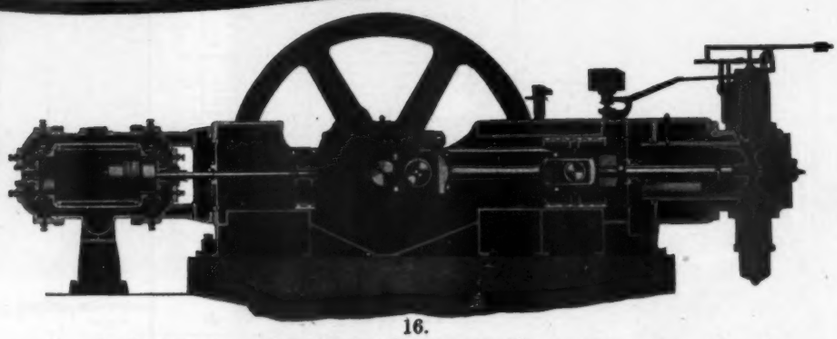
—Courtesy Zingery Oil Map Co., Fort Worth, Tex.

TRANSIT

17x24" Twin, Four-Cycle 170 H.P. SINGLE ACTING

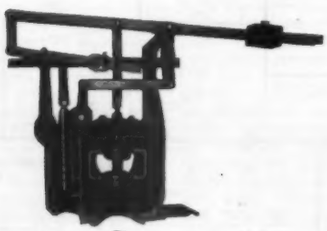
1.

Mr. S. B. Daugherty, the designer, is well known to many natural gas men as a designer and technical gas man.



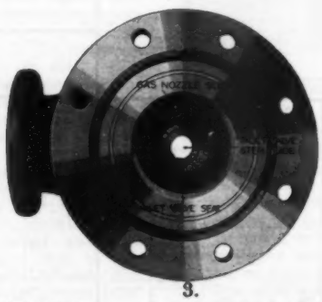
16.

Longitudinal Section. TRANSIT Model 26 Gas Engine Compressor, (above).



2.

The Regulating Valves proportion the mixture of gas and air, and control the amount of air and gas admitted to each cylinder.

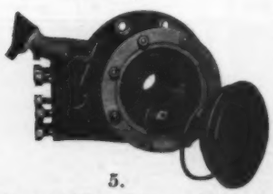


3.

Inlet Valve, gas nozzle arrangement. The vacuum produced on the intake stroke draws in the air over and around the gas nozzles projecting into the air stream, and the correct amount of gas as metered by the regulating valve, is drawn into the air stream through the long narrow slots of the gas nozzles in the form of thin ribbons of gas.

4.

A Tie Bolt (above), is provided through each frame at each main bearing. The weakening effect of the gap in the frame for the main bearing is entirely eliminated by this tie bolt.



5.

Exhaust Valve Casing, Upper Part (above). Note entrance of cooling water at pencil point, removable flanged sleeve with rubber gaskets, and slot for elimination of air pocket.

6.

Eccentric Bolt for adjusting crosshead shoes, (left). Crosshead shoes are of the hinged type, adjustable for wear by means of eccentric bolts passing through lugs on the crosshead.

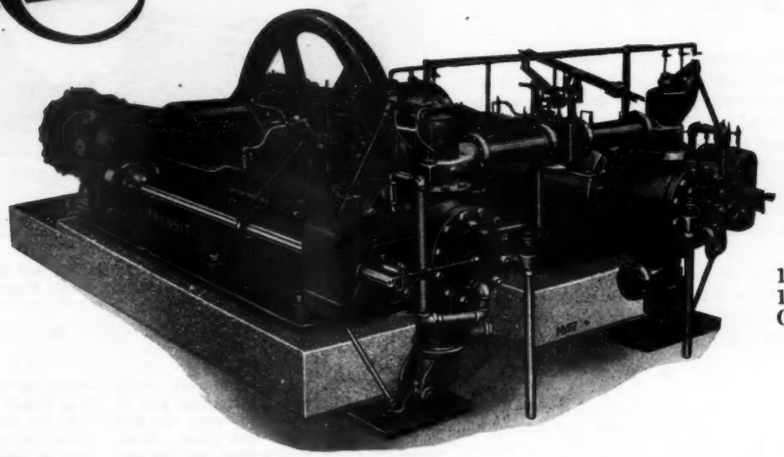
8.

The short, stubby crankshaft, (below), is 11½" in diameter. Distance between center of main bearing to center of crank pin is very short.

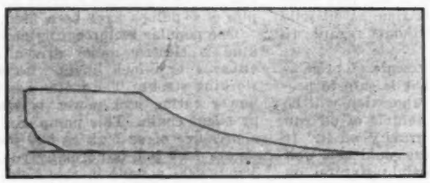
7.

Valve Mechanism, cover removed (left). Cam, cam levers and rollers are completely enclosed in a box with detachable cover, bolted to the outside of each cylinder casting. A single cam actuates the intake valve, exhaust valve and air starting valve. Broad faced cam and cam rollers insure long, accurate life to these important parts.

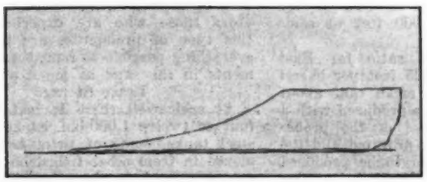
Gas Engine Compressor



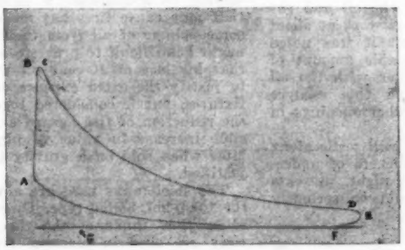
17.
17x24' Twin, Four Cycle 170 h. p. Single Acting Gas Engine Compressor.



9-10
Cards from inner and outer ends of second stage compressor cylinder.
These cards are notable in that they show no unseating pressure. This is due to very light valve plates and narrow seats.

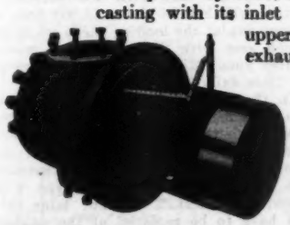


12.
Inlet Valve Casing, (left). Illustrating air intake and gas intake into inlet valve. Mixture occurs in inlet valve, just 1¾" ahead of inlet valve seat.



11.
Unretouched Indicator Diagram, (left), from left-hand cylinder of this engine. Diagram shows a nearly perfect mixture.

15.
Main Bearing Assembly (below), removed from frame to show construction.



13.
Each power cylinder, is a separate casting with its inlet valve on the upper side and the exhaust valve on the lower side. Bolting strains are not communicated to the cylinder bore.

14.
Air Starting and Check Valve Assembly, (left). The same cam that operates the inlet and exhaust valves is also used to operate the air starting valve. No chatter.

BEAUMONT, TEXAS
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Republic Supply Company of California
ST. LOUIS, MO.
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NEW YORK PHILADELPHIA CLEVELAND PITTSBURGH LOS ANGELES HOUSTON TULSA NEW ORLEANS

Lease Storage and Gathering Lines in East Texas Area

* * * * * *

Because of the fact that the bottom hole pressure of the East Texas Field wells is not sufficient to flow them through the casing it has been common practice to run 2½ or 3-inch tubing before washing out the drilling mud and produce them thereafter through this string of pipe. At the well head there is a christmas tree, and various size chokes are used to permit the volume of gas and oil to be regulated. The well head pressures vary from 250 to 350 pounds per square inch with this type of set-up and it has been noted where the wells have been produced at anywhere near their maximum capacity the pressures will fall off rapidly. They build up again when the well is again shut in to nearly the original pressure.

The tubing discharges into the usual type oil and gas separators mounted upon stands made of wood or steel or upon the hillside where elevation above stock tanks can be secured. From the separator there are lines leading to the lease storage tanks for the oil and usually a 4-inch gas line that terminates in a 20-foot riser at a safe distance from the trap to permit of gas to be burned. It is necessary to burn all gas at this time because there are no natural casinghead gasoline plants in the district due to the low price of that commodity although it is understood that this is a very rich gas that is being dissipated, running as high as 2½ gallons per 1,000 feet at some wells.

The average gas-oil ratio for East Texas wells is about 325 feet per barrel of oil and this would mean that about 1,625,000 feet per day is produced with a 5,000-bbl. well. Because of the probability of the field being prorated and the amount of oil permitted to be produced from each well will be much below this figure, the natural gasoline plant installation is not being very seriously considered at this time. This condition may change, however, and there is some talk of recycling this gas through the wells to permit the hot gas pumped into them to reduce the tendency of the paraffin in the oil to precipitate. Paraffin troubles in tubing and surface pipes will probably increase as the weather becomes colder and this is one suggestion that has been offered to overcome it.

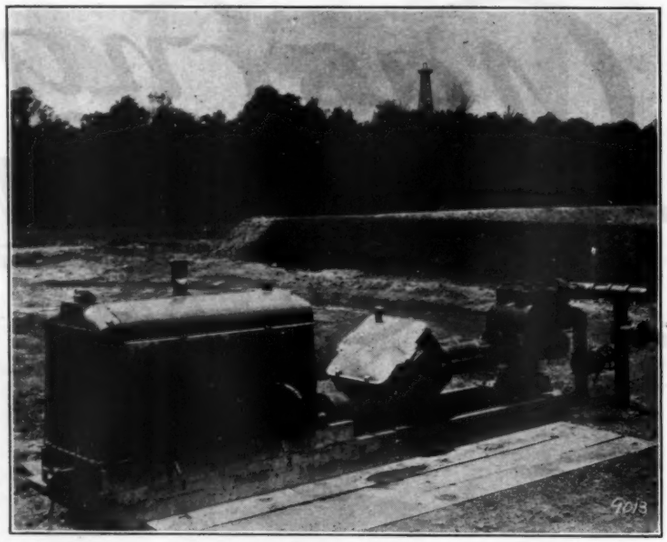
If wells are produced at such rate as to hold back pressures upon the sand and control water movements the volume of gas at any time will be relatively small and as salt water troubles will in time become of major importance to all operators those who are experienced with this type of production are now doing everything possible to retard water movements in the sand as much as possible.

* * *

Lease Storage

At each well there is installed from four to twelve 1,000-bbl. capacity bolted steel tanks, some of them having been moved in from other fields, but more recently they have been purchased new. They are so set as to permit the oil to gravitate to them from the oil and gas separator. The separators work at about atmospheric pressure but it was noted that there is a considerable amount of entrained gas carried over with the oil to the stock tanks and this escapes through thief hole and other openings in the tank decks.

This gas is heavy and will settle along creek bottoms and in thickets of underbrush and, especially at night, presents a fire hazard that should be seriously considered. The tanks could very easily be fitted with gas-tight fixtures and if necessary with stacks to carry the gas well up into the air and away. Some tanks are fitted with stacks, but the use of gas-tight tank valves is not very common in this area at this time as oil sells upon a flat price without regard to gravity.



Oil engine and pump used for gathering oil on Golding & Murchison lease in the Joiner Pool, East Texas.

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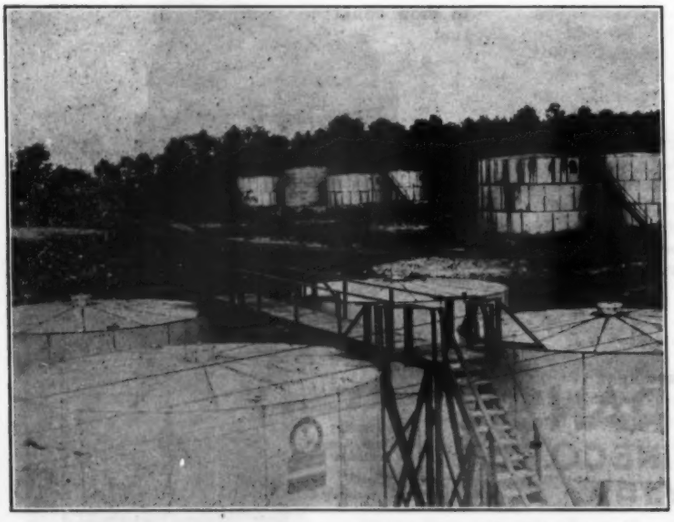


Bolted steel storage tanks in yard of the East Texas Refining Co., Friars Switch, Rusk County, Texas.

* * * * * * * *

However, if a gravity scale of price is established in this field it is safe to predict that the loss by evaporation will be appreciable both as to volume of oil run to pipe line and the gravity of it. It would seem that operators could now well consider the use of gas-tight fixtures on all lease tanks for they are not only releasing to atmosphere a dangerous gas that may cause fires but must be losing some volume of oil from their tanks. It might be difficult to prove to an operator that his loss of 10-cent oil was enough to justify the extra expense of gas-tight fixtures, but if considered together with the reduction of fire hazard and the possible increase in value of pipe line oil later when sold on a gravity basis, it is justified.

The steel tanks used are almost all of the 1,000-bbl. bolted type. On some properties flow tanks of the three-ring variety are used in place of oil and gas separators. Later when the wells produce more water it is probable that settling and treating tanks will be installed and these flow tanks may then be used for the double purpose of separating gas from oil and oil from water.

With the present low price of oil it is treated by settling only for it hardly justifies the use of chemicals or heat for separation of oil from water but later, with a better price for crude and with the wells making a greater percentage of water per barrel of oil produced, this problem will need serious consideration. Enough is not known about the character of the emulsion that will have to be treated to outline the probable processes that may be used but there has been enough experience gained in other fields with similar character of oil to permit of a quick solution of the problem when it becomes serious.

Gathering Systems

Because of the topography of the land in the East Texas area being of a hilly nature with alternate areas covered with timber and open spaces where farming has been followed it is necessary to pump most of the oil away from lease tanks to the pipe lines serving the field. It is reported that there are about 46 loading racks in this field and they have a combined capacity of about 1,750 cars per day and many of the lease tank farms are connected direct with loading rack by a 4 or 6-inch pipe line.

It has been necessary in any event to pump the oil from the tanks to destination at loading rack or main trunk line and for this purpose a great many small pipe line pumps have been used.

One popular reciprocating pump of this kind is electric motor driven and uses either 4 or 5-inch liners with a 10-inch working stroke. The motor has 50-horsepower rating and power is transmitted by silent chain. This pump can build up a pressure of as high as 800 pounds per square inch but is normally run at from 300 to 500 pounds in this field on gathering lines. It is well adapted to this kind of work as it can be mounted upon timber skids and when the electric line is strung to its location there is little more to do than make connections.

Oil engine driven pumps are also used to some extent in this work and in a few instances motor driven centrifugal pumps have been installed. On a few of the older leases where money for the purchase of equipment was scarce old steam type pumps have been installed and are still being used but it is not thought probable that this type of equipment will be used to any great extent when new equipment is being purchased.

Centrifugal pumps for gathering oil are being used in this district and are driven by electric motors of various sizes according to the pump capacities. Single stage pumps use from 15 to 60-horsepower motors and run at about 3,500 r.p.m.

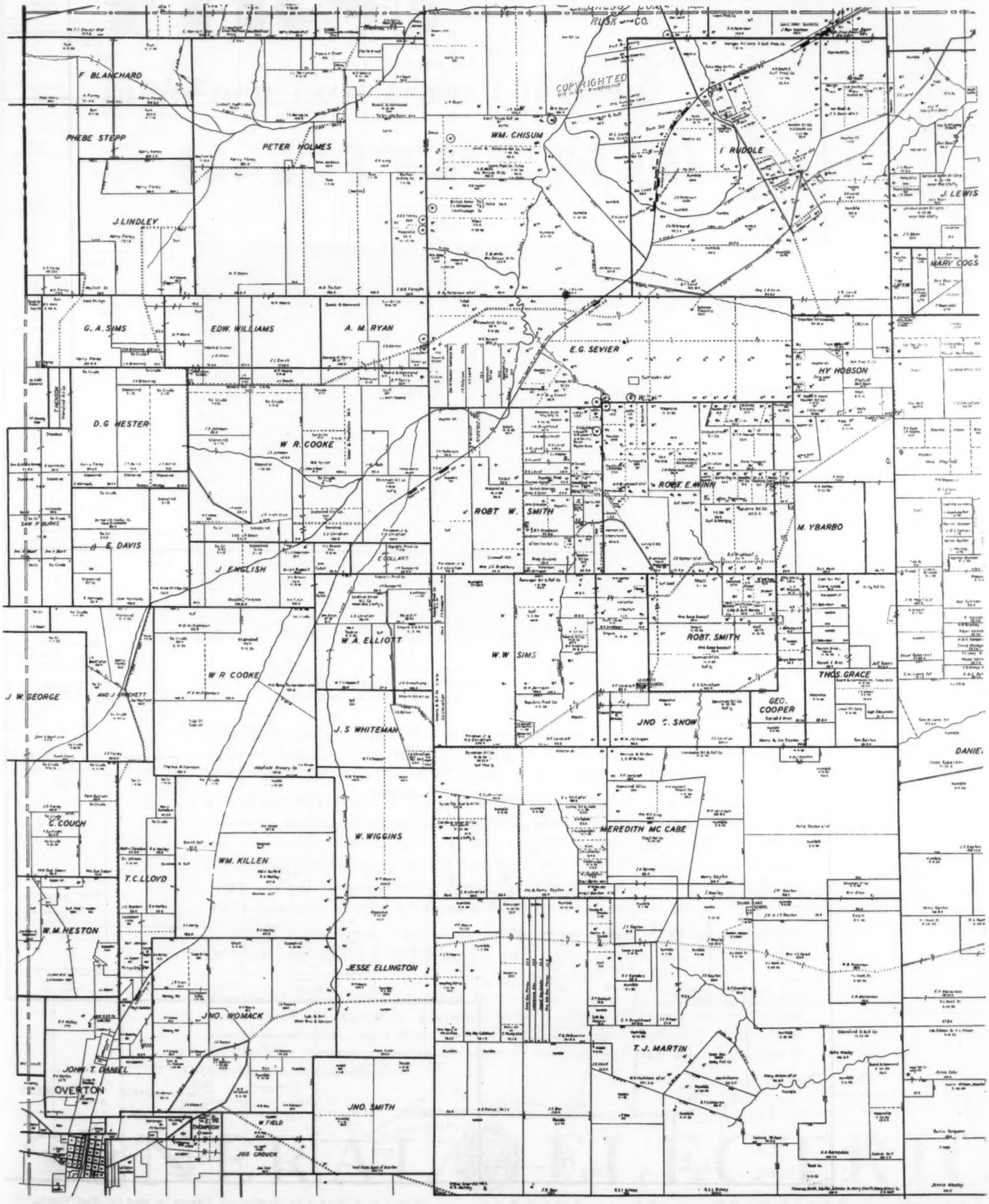
The 3-inch size with 150-horsepower motors will handle about 18,000 bbls. of oil per day at the loading racks while the 4-inch size with 250-horsepower motors deliver about 35,000 bbls. of oil through the lines daily in the same service.

In the early stages of development in this field many second-hand pumps were moved into the district from other fields where they were not needed at the moment. It is reported that over seventy-five 3"x10" pumps of this type were moved into East Texas but later they will have to be replaced at the original locations when more oil is run from those leases. Quick delivery was so essential during the early development that these pumps were moved by truck from as far away as West Texas leases and are now in use in the East Texas fields. They must be replaced in West Texas later.

There are 17 major trunk lines serving this district ranging in size from 6 to 12-inch lines and having a total capacity when all completed of about 650,000 bbls. per day. To reach these trunk

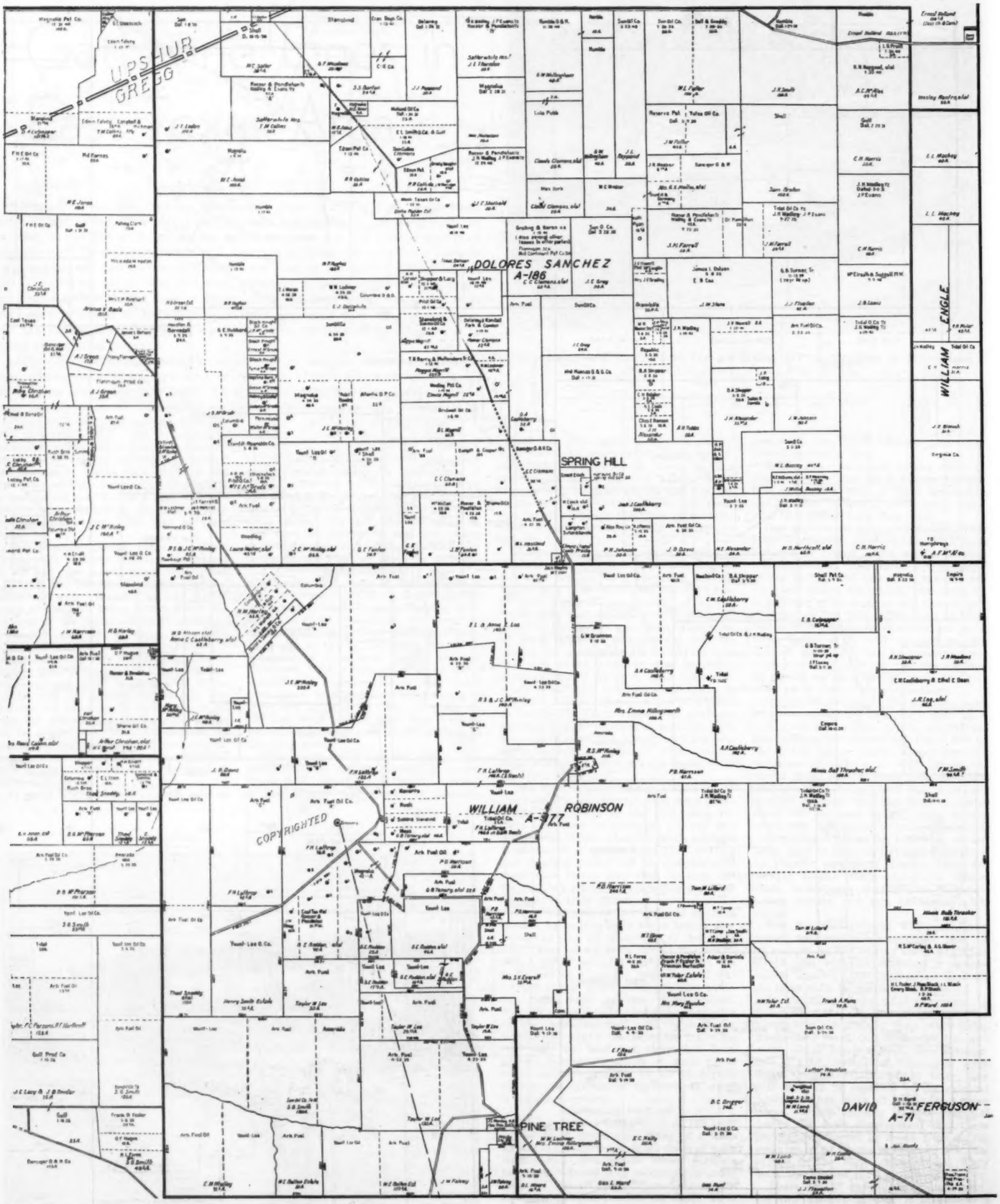
(Continued on Page 112)

Map of the Kilgore Area in East Texas



—Courtesy Zingery Oil Map Co., Fort Worth, Tex.

Map of the Lathrop Area in East Texas



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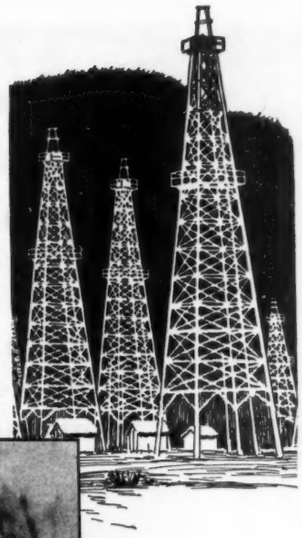

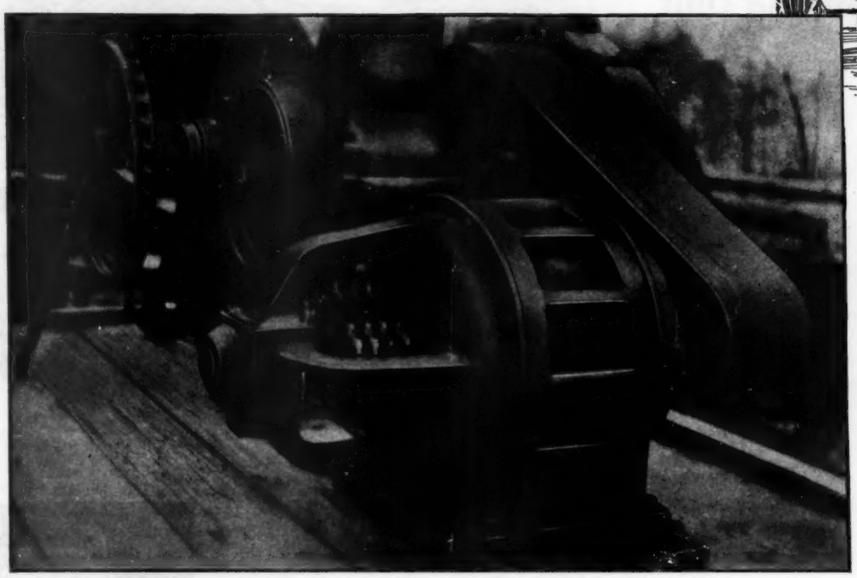

The first motor in Joiner Field — a G-E Type MTO, two-speed, wound-rotor, oil-well motor rated 55/25 hp., connected to Lufkin speed-reduction unit on the Pilot Oil Company's lease. View shows motor partially installed

FIRST in a great oil area that is gushing forth to the tune of eighty to ninety wells per week — THE GENERAL ELECTRIC TYPE MTO OIL-WELL MOTOR! That's acceptance of a proved, dependable product.

The Type MTO motor matches all power needs of a producing well — pumping, pulling, cleaning, bailing, swabbing, shaking up, and even deepening. No matter what type of rig goes into action in Joiner Field — whether the old standard or more recent designs — Type MTO will meet its requirements. It's the most flexible drive you can use at a producing well; its worth has been proved by more than 19 years of service.

Accepted for Joiner Field — accepted in scores of other important oil developments — Type MTO merits your consideration.

Type MTO motors with unit control are available through G-E warehouses located near your operations. They are available in ratings of 35/15, 50/20, 55/25, and 75/35 hp., for either 50- or 60-cycle supply, and suitable for either direct or belt drive. All sizes have the same general characteristics. Your nearest G-E office will be glad to provide complete information.

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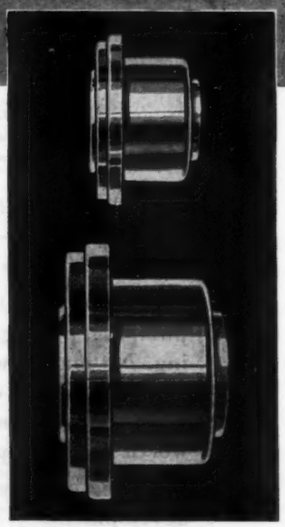
Extra strong housing and bearing supports and "Airplane", split sleeve type bearings are used . . . They can be removed without taking anything off the shaft ahead of the bearing. This Emsco Falk unit is compact, oil-tight, dirt-proof, quiet and cool in operation. It permits a higher reduction per gear and transmits load and transforms speed with less friction loss than ordinary types.

THE FALK CORPORATION—Milwaukee, Wisconsin

Manufacturers—Herringbone Gears, Speed Reducers, Flexible Couplings, Steel Castings and Oil Engines.



FALK COUPLINGS
Provide Dependable Service at Lowest Maintenance Costs

Falk Flexible Couplings, because of their special construction, assure exceptional resiliency with great strength, positive lubrication, ease of installation, low upkeep cost and dependable operation. They are made in standard sizes from 1/5 H.P. to 18,000 H.P. at 100 R. P. M. and are carried in stock for immediate shipment.

FALK SPEED REDUCERS

Future Possibilities and Requirements of East Texas Fields

* * * * * *

Judging by the work already done in the East Texas fields, it would seem that this area will prove a prolific market for the sale of all kinds of equipment and supplies for many years to come. Much old material has been moved into it and used during the early days of development but instead of proving detrimental to the manufacturers this should be welcomed because it has forever removed that surplus and second-hand apparatus from the market.

The territory in which the East Texas fields is located will all have to be built up to provide the needs of the great field that is now in the making. This will require all the essentials for the home, office and workshop as well as equipment for the lease, pipe line and refinery.

Sectional houses will be used in many places in this field and new camps are being established and those already started enlarged and they will be modern in their appointment and require a vast amount of material. If this area has 90,000 acres of productive oil sands, which is a conservative estimate of its size, it will have not less than 6,000 wells when completely developed. With one man taking care of a minimum of 10 wells it will give employment to 600 men in the oil fields and with their families this will make up a population of not less than 2,500 people.

In addition to lease men there will be gaugers, pipe line station operators, drillers, and others working on new wells, clean-out crews, men in charge of oil treating plants, warehouses, trucks, offices and every other branch of the producing and transporting departments. The refineries and loading racks will also employ many men and in addition to all this there will be employment for many serving the needs of the workmen and their families.

With these new improvements going forward over a period of years, there will be opportunity for the sale of much new equipment for while many families have moved in from other fields it has not always been convenient to move the household goods also. Heavy articles have been sold and will be replaced in the East Texas fields.

Old Towns to Be Rebuilt

The towns that were in the area before the striking of oil have all been greatly enlarged and improved and as time goes on and royalty money is made available many of the old buildings will be replaced by more modern structures. This is only a natural desire of the old residents of the community to spend their newly acquired wealth in the old home town. This type of improvement will be of a permanent nature and will give employment to hundreds of skilled men for some time to come.

In the oil fields new homes must be erected for workers and many small communities will spring up around refineries and loading racks where workers may be close to their work and still have a reasonable amount of comfort.

To care for all this there will be electric power lines run, gas mains extended and water systems built. This will all mean the purchase of equipment and supplies for such enterprises. It was quite noticeable that creosoted poles for power lines were being used in great numbers in this area and the future expansion of telephone systems should give added uses for this type of material.

* * *

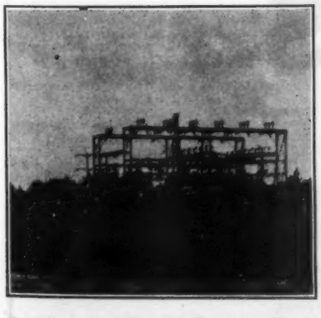
With new gas systems being laid there will be need for gas meters, stoves and heaters and other accessories common to such distributing systems.

The use of electricity will be quite common in all parts of the field and will provide a place for sale of the usual accessories that use this type of power.

Water systems may be developed in several ways and with any system used there will be a demand for pumps, pipe, valves and fittings, sinks, wash basins and bathtubs as well as other accessories.

It is impossible to outline the vast amount of equipment of all kinds that will be absorbed in the building up of this great area, about 200 square miles in extent, but it is safe to predict that all kinds of material common to other communities will be used in goodly quantities there.

* * * *



Transformer station, Southwestern Gas & Electric Co., East Texas Field, at Friars Switch.

Leases to Be Equipped

The work of equipping the leases has only just begun and while some of the more important items of equipment that is now being used or may be used has been mentioned in other articles in this same issue, it is next to impossible to enumerate in detail everything that will be required to place these properties in working condition.

While the work of development has been going forward very rapidly since the first of the year not over one-sixth of the wells have yet been drilled and the development of other details around the lease is probably not half completed.

Actual drilling and producing equipment will be in demand for a long time to come and it is hoped that the development of the field will be so ordered as to make for the steady sale of suitable apparatus and supplies.

To get its share of this business it will be well for each company having suitable machinery or goods for the lease needs to have men in the field who are capable of making a careful and accurate survey of conditions and make reports to the home office that will permit manufacturing plans and warehousing of material to be handled in an economic and satisfactory manner.

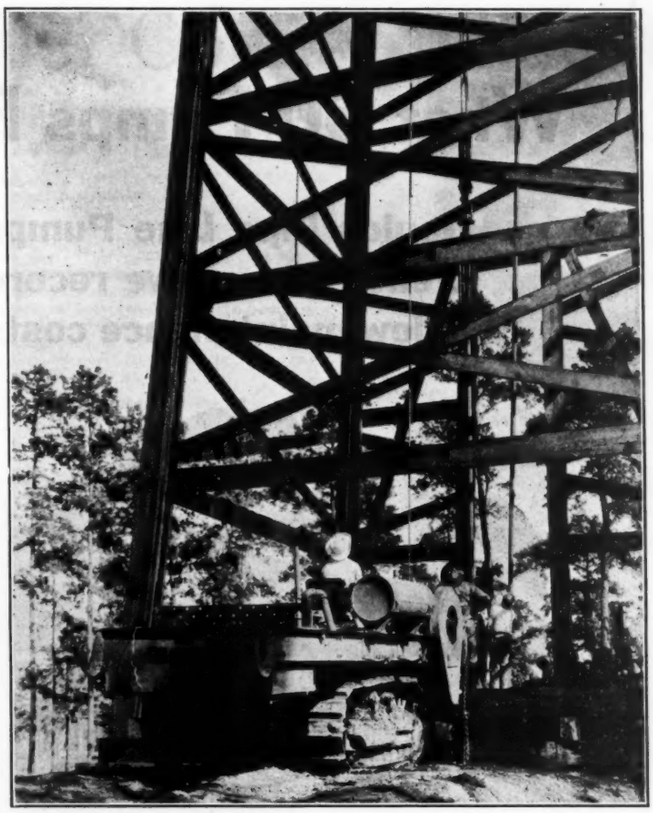
In this pool, as in all other pools, during the period of development the men in charge of the work are always busy and while glad to see their friends of the trade it is not always possible for them to give them the time that might be desired.

Past experience in other fields has shown some salesmen the desirability of making themselves thoroughly familiar with the methods and requirements of the production man and by gaining his confidence through serving him in an intelligent and satisfactory manner be permitted to aid in his detailed work to the extent of working out details of his requirements for him.

This may sound complicated and perhaps many will be inclined to doubt the willingness of production men to accept assistance of this kind from salesmen, but it is not, and even though it may not be possible for the salesman to so win the confidence of his customer as to be able to "write his own orders" it will be found greatly to the advantage of the salesman if he has at all times an intelligent knowledge of his customers' needs.

Study Field and Development

Because of the size of this field it has been difficult for many to grasp the details of its development, but just because it is of great size it is not going to be possible for any one salesman for a company to cover all parts of it and men must therefore be assigned to some particular territory and work it intensively.



All-steel winch pulling tubing and rods on Sinclair Oil & Gas Co.'s Holland lease in Joiner Pool, East Texas Field.

* * * * * * * *

Roughly the field can be divided into three east and west zones which will extend the full north and south length of the field, the western, central and eastern portions. The western zone will be largely affected by the closeness of water on the west side; the central zone by gas and water and the eastern zone by the lack of water in the producing formation.

The field can again be divided into zones running from east to west in the three principal districts and in those zones it will be found that some parts are more productive of oil than others. This is due to long ridges and valleys that were formed by the old water courses emptying into the ancient sea and some spots will have good producing sands in continuous bodies, in others the sands are separated by shale and red bed breaks.

It has already been learned that in parts of this area the production is found just beneath the Austin chalk formation in comparatively thin beds; in other places the sands are quite thick with shales beneath. Lenses of sand have been penetrated with bodies of shales between, and in some parts of the pool the producing formation lies at the very bottom of the Eagle Ford series and close to water.

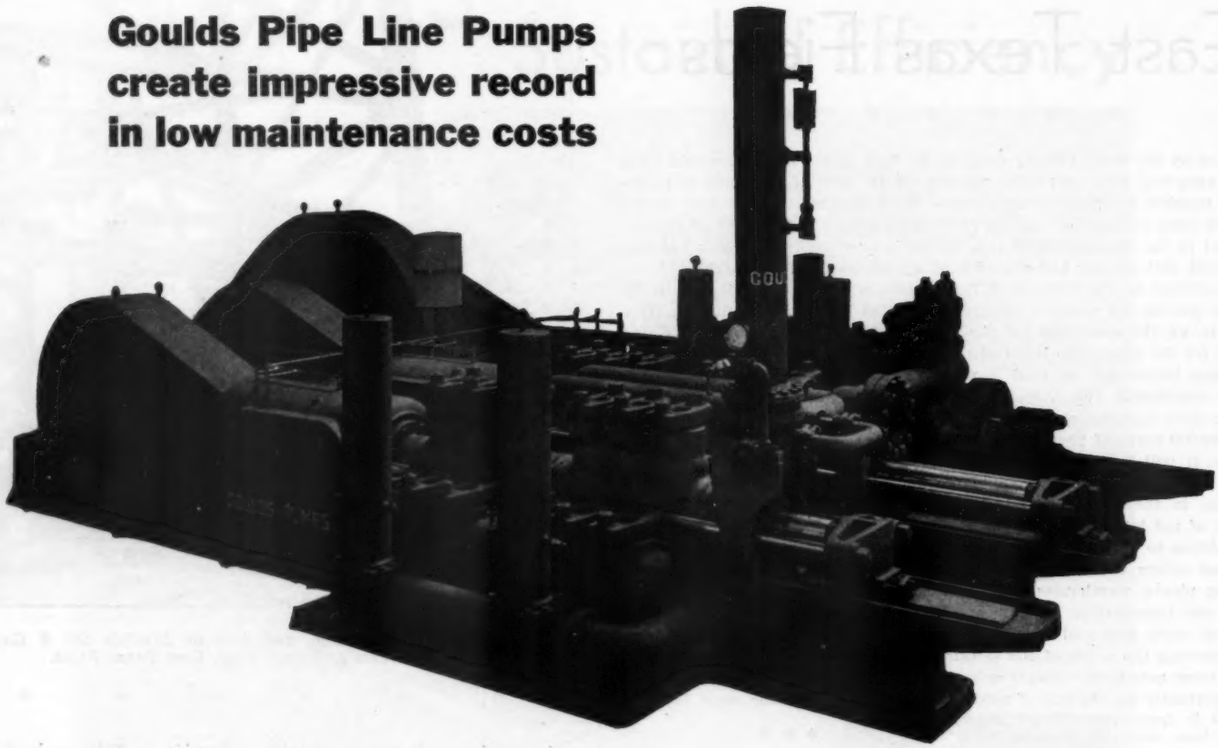
All of these conditions of stratigraphy will play a part in the development of wells and methods used in producing them. The field man for the supply company should know of the conditions on each of the leases in his area and by making frequent trips to wells drilling and producing should gain a thorough knowledge of the characteristics of each well.

Bottom hole pressures vary in different parts of the field but in a general way they are about 1,500 pounds per square inch. It requires about 1,200 pounds of this pressure to sustain the hydrostatic column of oil and gas in the average well

(Continued on Page 110)

What 60 Pumps Proved to 1 Company

Goulds Pipe Line Pumps create impressive record in low maintenance costs



Since January, 1925, one large pipe line company has purchased 60 Goulds Pipe Line Pumps. That, in itself, speaks for the satisfactory performance of the product.

Add to that fact... over a period of seven and one half years, there was not a single major replacement. All parts ordered were for minor repairs only. The total cost of these repairs, per pump, averaged only $24.50 during the entire period.

These pumps are built with exceptionally substantial frames, which are securely bolted and doweled to prevent distortion. Long life is built into them in every way that we know how, and finally, the fluid end is hydrostatically tested up to 3500 lbs.

Goulds pipe line station pumps are made in sizes from 12″ up to 36″, which size has a capacity of 50,000 barrels per 24 hours. For complete information, address the nearest branch office, or the factory.

World's Largest Makers of Pumps Exclusively

GOULDS PUMPS INC.

SENECA FALLS • NEW YORK

OIL FIELD BRANCHES

HOUSTON
2114 Second Nat. Bk. Bldg.

DALLAS
417 Magnolia Bldg.

TULSA*
213 E. Archer St.

*Branch warehouse

Oil Found in Schleicher County Wildcat

New Producer in Upton County. Deep Development Co. Encounters Another Pay in Archer County. East Texas Oil Invades Wichita Falls

By L. E. Brodberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Aug. 10.—While oil runs and production continued to gain in East Texas during the past week, production in the Permian Basin decreased 1,359 bbls. per day and distribution gained over 10,000 bbls. per day, 7,300 bbls. of this amount run by main lines while shipments to local refineries increased 2,600 bbls. of this amount. Daily average production for the week was 204,953 bbls., or less than one-third of the daily average made by the East Texas district during the week.

The first oil was run through the Texas Pipe Line Co.'s 27-mile 6-inch line from the Big Lake Field, Reagan County, to its pumping station at Iraan on its main line to the Gulf Coast, and the line will deliver oil from the deep wells of the Big Lake Oil Co. to the Republic Refining Co.'s refinery at Houston, in which the former has an interest. Oil was started through the line in the fore part of the week. This gives the Big Lake Pool its second outlet, the Reagan County Purchasing Co. having a line from the field connecting with a tank farm and Humble Pipe Line Co.'s main station 3 miles east of the field. Reagan County Purchasing Co. has been taking all of Group No. 1 Oil Corp.'s oil and part of Big Lake Oil Co.'s oil from the field, the latter shipping out part of its production to the Republic Refining Co.'s plant at Houston by tank car. The Texas line was constructed to cut down transportation costs for the Big Lake Oil Co.

Schleicher County Wildcat

J. D. Wesner and others' No. 1 Nicks, the Schleicher County wildcat which has been making some oil, is being underreamed from 4,006-65 feet, the latter being the total depth of the hole. Six and five-eighths-inch casing is to be cemented on the bottom to shut off water which is coming from around 2,900-4,038 feet. Three thousand feet of fluid, mostly water is standing in the hole.

One of the first land trades, at least a trade in which production is involved, was consummated during the week when the Cardinal Oil Co. of San Angelo purchased a 20-acre lease in Section 6, Block 33, Township 2s, T.&P. Survey, Howard County, on which there are two pumping wells making a total daily average of around 150 bbls. from the 2,200-foot pay. The company has 27 producers in the Torborg-Tippett shallow pool, Pecos County, but this is its first lease and production obtained in Howard County.

New Upton County Well

Upton County got another producer this week when Baldwin and Mintex Oil Co.'s No. 1 Lane in Section 36, Block 1, M.K.&T. Survey, was deepened to 2,325 feet and encountered another increase in oil, looking good for about 100 bbls. per day. First oil was logged at 2,220 feet, and an increase was struck at 2,240-45 feet, the third being logged this week at 2,250 feet. The well is in the eastern extension of the McCamey Pool, and is one of the few wells drilled in the pool within the past year and a half. The pool was one of the first discovered in the Permian Basin, and many of the wells have been abandoned, and others are being abandoned gradually as water entirely drowns out the oil, and production falls to nothing.

The Humble Pipe Line Co. has connected to The Texas Company's No. 1 Jean, northern Fisher semiwildcat which was completed last week extending the Royston Field about a mile. The daily proration allowance for the well is 139 bbls. It is located in Section 201, Block 1, B.B.B.&C.R.R. Survey. Completion information was given in last week's West Texas report in The Oil and Gas Journal. Cranfill & Reynolds will probably drill a south offset, while The Texas Company will probably put down an east offset test.

NORTH TEXAS

Deep Oil Development Co. and Lindsey Drilling Co.'s No. 5-A Wilson in Block 75, American Tribune New Colony Subdivision, 5 miles northeast of Archer City, in Archer County, encountered another deep pay horizon this week at 3,614 feet, and is estimated good for at least 200 bbls. per day from this new pay. Casing has been set and the well is being tested. Total depth is 3,640 feet. It offsets a 335-bbl. well which is producing from the 2,200-foot pay horizon, and is in the center of many abandoned wells which formerly produced from the 2,500-foot pay. This newly encountered horizon will undoubtedly cause the deepening of many of those abandoned holes, although at the present time the industry is not in such a condition as to merit the cleaning out of these oil holes, or redrilling them. Oil from the new pay tests 42° gravity.

WEST TEXAS PRODUCTION

Week Ending August 8, 1931

County—	No. Wells	Prod.
Andrews	4	0
Crane	377	14,692
Crockett	51	1,265
Ector	78	7,626
Fisher	11	700
Garza	2	16
Howard-Glasscock	543	28,406
Irion	9	54
Jones	36	1,400
Loving	42	3,870
Mitchell	111	1,796
Pecos	547	73,008
Reagan	255	24,835
Runnels	5	70
Scurry	5	0
Upton	261	4,637
Taylor	3	70
Ward	65	3,027
Winkler	595	40,481
Total production this week		204,953
Total production last week		206,312
Decrease		1,359

PANHANDLE

Conditions in the Panhandle district continue to look better with the daily allowable slightly better than the daily production, refineries and pipe lines taking all of the oil, and none of the wells suffering for connections as in the past.

The Bell Oil & Gas Co. made another encouraging move in the district this week, as well as in the Wichita Falls district, when it raised the price of Gray County, Texas, Oklahoma and North Texas crude 10 cents per barrel, making the new price schedule range from 40 cents per barrel for 28 gravity and below to 52 cents for 40 gravity and above. The company purchases between 20,000 and 25,000 bbls. per day in the three districts. The increase was made effective because of the scarcity of oil in the districts, and other purchasing companies operating in the district may be expected to meet the Bell Oil & Gas Co.'s prices.

The Wichita Falls district has witnessed the invasion of East Texas oil, which is going to several of the refineries near Wichita Falls, and the new price by the Bell Oil & Gas Co. puts the price of the North Texas oil on a par with the price of the East Texas oil laid down in Wichita Falls.

NORTH TEXAS PRODUCTION

Week Ending August 8

Panhandle district—	
Carson County	4,846
Gray County	38,668
Hutchinson County	9,772
Moore County	1,461
Potter County	0
Wheeler County	273
Total production this week	55,020
Total production last week	54,348
Increase	672
Wichita Falls district—	
Archer County	11,665
Baylor County	358
Clay County	559
Cooke County	1,065
Foard County	59
Haskell County	22
Jack County	3,096
Montague County	3,962
Throckmorton County	421
Wichita County	17,671
Wilbarger County	12,285
Young County	10,668
Total production this week	60,831
Total production last week	62,245
Decrease	1,414
Ranger district—	
Brown County	3,429
Callahan County	1,821
Coleman County	2,046
Comanche County	302
Palo Pinto County	454
Eastland County	2,627
Shackelford County	1,927
Stephens County	4,212
Total production this week	17,318
Total production last week	17,647
Decrease	329

WEST TEXAS COMPLETIONS

Andrews County

Deep Rock Oil Co. and others' No. 1 Kuykendall, total depth 4,648 feet.

(Continued on Page 97)

WILDCAT OPERATIONS IN WEST TEXAS

Week Ended August 10

BREWSTER COUNTY

Company, well, farm name, section and block—	Remarks—
Brewster Oil Co.'s No. 1 fee, 2,640 ft. S and 2,598 ft. E of NW cor. Sec. 45, Blk. G-15, G.C.&S.F. Sur.	Shut down 1,935 ft.
E. L. Chapman's No. 1 Skinner, C SW SE Sec. 100, Blk. 2, G.C.&S.F. Sur.	Shut down 1,302 ft.
Trans-Pecos Oil & Gas Co.'s No. 1 Jones, 930 ft. from N and 2,500 ft. from E of Sec. 18, Blk. G-15, G.C.& S.F. Sur.	Shut down 2,900 ft.
Van McPhail's No. 1 McIntyre, SE cor. Sec. 59, Blk. 352, 7 miles south Alpine	Shut down 1,750 ft.

COCHRAN COUNTY

Penn Oil Co.'s No. 1 Myrick, C Labour No. 80 of League 129, Carson County School Lands	Moving in material.

CONCHO COUNTY

Beesley et al's No. 1 Waring Estate, 400 ft. from N and E Sec. 163, T.&N.O. Sur.	Shut down 267 ft.
Betts & Dennis' No. 1 H. E. Woods, 710 ft. from E and 150 ft. from S Sec. 3, H.E.&W.T. Sur.	Shut down 80 ft.
Turner et al's No. 1 Borsig, 150 ft. from S of NE cor. G. Emmig Sur. 130, 6 miles W of Paint Rock	Shut down 1,850 ft.

CRANE COUNTY

Southwest Oil Prod. Co.'s No. 1 Tubbs, 2,310 ft. from NW and SW Sec. 3, Blk. B-27, P.S.L. Sur.	Location.

CROCKETT COUNTY

Doleman & Moore's No. 1 Ferner, 3,135 ft. from N and 1,485 ft. from E of Sec. 36, Blk. 3, I.&G.N. Sur.	Spudded and shut down.

CULBERSON COUNTY

Kornrumpf et al's No. 1 Garren, 330 ft. S and W Sec. 15, Blk. 79, Public School Land	Shut down 1,900 ft.

ECTOR COUNTY

Weekly Oil Corp. et al's No. 1 Cowden, 1,980 ft. from N and W Sec. 33, Blk. 42, Twp. 2s, T.&P. Sur.	Location.
H. F. Wurts' No. 1 E. A. Ibbetson et al, 330 ft. from N and E lines of NW Sec. 16, Blk. 46, Twp. 3s, G.M. M.Br.&A. Sur.	Shut down 3,275 ft.

EL PASO COUNTY

Tri-State Oil Co.'s No. 1 Bobadella, 1,325 ft. from S and E lines Sur. 254, S.F. No. 7,247	Drlg. 1,325 ft.

FISHER COUNTY

Cranfill & Reynolds' No. 1 George, 400 ft. from N and 380 ft. from E. Sec. 200, Blk. 1, B.B.&C. Sur.	Bldg. rig.

(Continued on Page 48)

WILDCAT OPERATIONS IN TEXAS PANHANDLE

Week Ending August 10

CARSON COUNTY

Company, well, farm name, section and block—	Remarks:
Deep Lake Oil Co.'s No. 1 Keys, NE cor. SW, Sec. 1, Blk. 4, I.&G.N. Sur.	Drlg. 3,310 ft.
El Paso-Amarillo O. & G. Co.'s No. 1 Chapman, 594 ft. S, 1,458 ft. E, Sec. 7, Blk. 3, A.B.&M. Sur.	Rig.
Empire G. & F. Co.'s No. 1 Poling, 1,320 ft. S and W, Sec. 28, Blk. Y-2, T.T.R.R. Sur.	Drlg. 300 ft.
The Texas Co.'s No. 1 Crutchfield, 1,320 ft. S, 1,321 ft. E, Sec. 29, Blk. 4, I.&G.N. Sur.	Drlg. 2,385 ft.

CHILDRESS COUNTY

C. L. Sloan et al's No. 1 B. P. Smith, Sec. 45, F. P. Knott lands	T.D. 5,000 ft.

COLLINGSWORTH COUNTY

Dixon et al's No. 1 Bell, 330 ft. N, 1,320 ft. W, Sec. 102, Blk. 21, H.&G.N. Sur.	Fishing for pipe 2,503 ft.
Downey et al's No. 1 Beasley, SE cor. SW SE, Sec. 95, Blk. 15, H.&G.N. Sur.	Rig on ground.

GRAY COUNTY

Anderson et al's No. 2 Vollmert, 330 ft. N and W, SW, Sec. 140, Blk. 3, I.&G.N. Sur.	Rig.
Back & Barber's No. 1 Back, 330 ft. S and E, SW, Sec. 45, Blk. 25, H.&G.N. Sur.	Location
Boyles et al's No. 1 Colebank-Morse, 330 ft. NE, Sec. 65, Blk. 25, H.&G.N. Sur.	Spudded and S.D.
Brown et al's No. 1 Duncan, 330 ft. S and E, NW, Sec. 93, Blk. 3, I.&G.N. Sur.	S.D. 980 ft; trying to pull 8-in. csg.
Danciger O. & R. Co.'s No. 1 Barnett, 231 ft. S, 330 ft. W, E½ of N 56 ac., Sec. 136, Blk. 3, I.&G.N. Sur.	5,000,000 ft. gas 3,097 ft; S.D. 3,097 ft.
Humble O. & R. Co.'s No. 1 Hughey, C NE, Sec. 154, Blk. 3, I.&G.N. Sur.	Drlg. 1,000 ft.
Parton Holt and Shell Pet. Corp.'s No. 1 Morse, 330 ft. S and E, Sec. 6, Blk. 26, H.&G.N. Sur.	Rig.
Jean Pet. Co.'s No. 1 Furneaux Bros., 330 ft. N and W, cor. SE, Sec. 200, Blk. B-2, H.&G.N. Sur.	Drlg. after 80 quarts shot 2,430 ft.
Magnolia Pet. Co.'s No. 1 Heaston, NE cor. S½ NE, Sec. 164, Blk. 3, I.&G.N. Sur.	Rig on ground.
Nelson et al's No. 1 Crews, 330 ft. S and E, NW, Sec. 12, Blk. 25, H.&G.N. Sur.	S.D. 2,619 ft.
Pulse-Shell Pet. Corp.'s No. 1 Simpson, SE NE, Sec. 140, Blk. 3, I.&G.N. Sur.	Drlg. 3,000 ft.

(Continued on Page 48)

Seventy-three New Wells in East Texas

District's Production Reaches Almost 655,000 Bbls. Daily. Possible Limit to Western Gladewater Area

By L. E. Bredberg
Fort Worth Bureau, The Oil and Gas Journal

FORT WORTH, Tex., Aug. 10.—Production in the East Texas district continued to gain this week, going almost to 655,000 bbls. per day, and distribution also gained, shipments to local refineries, runs through trunk lines and tank car shipments amounting to 626,495 bbls., while 27,745 bbls. were run to storage, which was a little over 14,000 bbls. less than the daily runs to storage during the previous week. Trunk pipe line runs increased 47,255 bbls., due to three of the pipe line companies increasing the capacity of their lines and adding more pumping stations, and also pumping to the limit on their present systems.

There is a total of 1,468 producing wells in the district at the present time, an increase of 73 during the week. Thirty-three new wells were added to the Joiner Pool, Rusk County; the Kilgore Pool was increased by 24 new producers, and 16 producers were completed in the Lathrop area. There are 603 producers in the Kilgore Pool, with production estimated at 275,726 bbls. per day; 560 wells in the Joiner area making an estimated daily average of 230,625 bbls. this week, and the Lathrop area has 305 producers making around 147,885 bbls. per day.

Activities in the district are slowing down but little, the major companies continuing to stake new locations and carry on drilling activities, while the low price of crude, lack of finances, lack of connections and other miscellaneous reasons are holding back the smaller operators from developing their leases.

Leases Purchased

The major companies continue to purchase a few leases in the district, but buying has slowed down during the past two weeks, there being but few tracts for sale, and high prices preventing these from changing hands. However, a few sales were reported during the past 10 days. The Magnolia Petroleum Co. purchased the Scurry Christian 15.34-acre tract in the G. W. Hooper Survey, Gregg County, for a reported sum of $1,000 per acre. The Magnolia Petroleum Co. also purchased 29.41 acres of the Martin Andrews farm in the J. T. McDaniels Survey, joining the company's Andrews 25-acre tract in the Blair Survey, on the south. One thousand dollars per acre cash was reported as the consideration for this tract. The company also purchased 15 acres of the George Jones farm in the G. W. Hooper Survey, Gregg County. This joins the company's Smitherman 40-acre tract on the east. Same consideration as above was paid for this lease.

The Texas Company purchased 40 acres of the George Jones farm in the G. W. Hooper survey, Gregg County.

The Dana Oil and Gas Co. sold one half interest in all of its properties held jointly with Jim Cloud, this acreage being located in Gregg and Rusk County.

Humble Oil and Refining Co. was reported to have purchased the south 60 acres of the John Bell 87-acre farm in the S. P. Hollingsworth survey, Rusk County, and the A. Holts 41-acre tract, which adjoins it on the east. The consideration was reported as $75,000 cash and $75,000 opt of seven-sixteenths of the oil.

Erecting Storage

The Petroleum Pipe Line and Storage Co., headed by J. G. Reaves of Tyler, is purchasing considerable oil in the ground, paying for it in advance, and will erect two 55,000-barrel tanks in the Joiner Pool to handle part of the oil as it is produced, holding it for a better price. Two other 55,000-barrel tanks may be erected in the Gladewater area for the same purpose. The company is paying 10 cents per barrel in advance for this oil while the major companies purchase oil and do not pay for it until the end of the month after they have calculated the average price for which oil has been sold in the district during the month. Paying in advance appeals to the operators who are in need of ready money for various operating expenses. Two other parties are purchasing oil in the ground, paying in advance for it.

The J. W. Mundt Fuel Oil Co. has been purchasing fuel oil from the local refineries in the district paying 15 cents per barrel for it and jobbing it to the operators in the fields for drilling operations, hauling it by truck to the locations. Although this does not consume a great quantity of the excess fuel oil which is being put out by the many refineries in operation, it does help to take some of it off of the market, which is flooded in regard to this commodity, the railroads finding it difficult to use it in their engines, although they have contracted for considerable of it. Many of these contracts will probably be dropped when they expire as the viscosity of the fuel oil is such that it cannot be readily assimilated in the locomotives. Dropping these contracts will throw the burden of finding new markets for the oil upon the small refineries.

However, other railroads have been converting coal-burning locomotives into oil burners due to the fact that fuel oil was never so cheap and plentiful before, and other roads which have heretofore not tried East Texas fuel oil may book large contracts for supplies of the cheap commodity. The Chicago, Rock Island & Pacific Railroad is one of the roads which has been converting some of its engines into oil burners.

Shipments to Oklahoma

Whether East Texas operators will sell quantities of oil to Oklahoma refineries at 10 cents per barrel remains to be seen, but considerable oil will probably be sacrificed at this price, many of the operators taking this price in the district at the present time, selling to whoever has and will pay the price, consequently much of it is expected to be shipped north into the neighboring state. Railroads in the district have facilities for shipping out an estimated 370,000 barrels per day by tank car, and as only 185,625 barrels were shipped out daily during the week, this leaves an estimated 185,000 barrels tank car room which might be utilized for shipping out oil to Oklahoma if the operators in East Texas care to take advantage of the opportunity for sacrificing their oil.

L. A. Casey, independent operator of San Antonio and Tyler, is backing an East Texas co-operative sales agency, which has opened offices in the Adolphus Hotel, Dallas. He says it looks probable that it will become the working organization of East Texas marketing independents' oil and possibly raising the price of crude in that district. The first bulletin has been published by the organizers.

Capt. J. F. Lucey has also mentioned such a co-operative marketing association for the district, considering it as one of the possible, if not the best, method of solving the low priced crude problem.

The Humble Oil and Refining Co. announced it would pay 15 cents per barrel for the oil purchased by it in the East Texas district in July, the same as paid in June. This is the average price paid in the district, some purchasers paying only 10 cents per barrel, others 13 cents per barrel, while still others are paying 18 and 20 cents per barrel. Top price is 20 cents per barrel.

Gladewater Limit

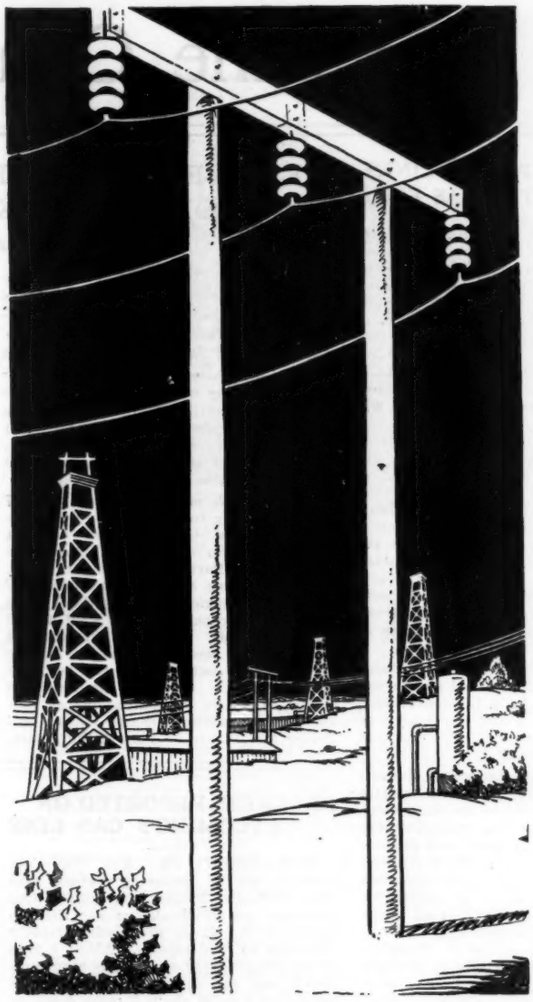
The Texas Company's No. 1 Walker in the Davis Survey, approximately three-quarters of a mile northwest of the Snavely producer, and south of the Walker dry hole in the Gladewater area, western Gregg County, is apparently limiting the producing area on the western side as the test is now shut down at 3,588 feet in dark shale after having cored only 1 foot of saturated sand from 3,585-86 feet. It encountered Austin chalk at 3,545-58 feet and shale from 3,558-68 feet, logging what was thought to be the Woodbine at 3,573-78 feet. Sand, which was not saturated, was cored from 3,582-85 feet. It may be drilled in the hopes of picking up more saturated sand,

(Continued on Page 103)

Oil and gas separator located at some distance from well of Big Ben Oil Co., Henderson district, East Texas.

Power shovel excavating slush pit in East Texas Fields, Henderson district.

Faster Cheaper Production in East Texas when you pump with ELECTRICITY !



YOU install electric pumping equipment for less money. You maintain it at less expense. Smaller crews look after more wells. The hazards are less.

And of equal importance in East Texas where recovery is from a common pool, Electricity gives you speedy, uninterrupted maximum production. Your competition in the race to drain the pool will be electrically equipped.

We have a network of dependable power lines crisscrossing East Texas in every direction. We use the "loop" system of transmission, supplemented and guaranteed by interconnections with the transmission systems of other power companies. The great dependability of our service is already well demonstrated.

We invite you to enter with us into details of cost and efficiency, without obligation of course. The producer who passes up Electric Power in East Texas will make a costly mistake. Now is the time to investigate!

SOUTHWESTERN
GAS & ELECTRIC COMPANY

Serving 143 Communities in 4 States

SHREVEPORT, LA.

Pipe Line Construction News

EXTENDING POWER LINES IN EAST TEXAS FIELD

SHREVEPORT, La., Aug. 10.—Demands for electric power in the East Texas fields have brought from the Southwestern Gas & Electric Co. announcement of an important interconnection with the Texas Power & Light Co. at Overton, Tex. Construction of a 30,000-horsepower substation at Overton transforming from 132,000 to 66,000 volts to supply additional electric power and further improve service in the oil area will begin immediately, according to A. Lieberman, president of the Southwestern Gas & Electric Co. The substation will connect with the 66,000-volt system of the Southwestern Gas & Electric Co. from which the entire Rusk and Gregg County fields are served. The substation will receive energy purchased from the Texas Power & Light plant at Trinidad and transmitted to Overton over a new 132,000-volt line which is now under construction. The new substation will be one of the largest transmission substations in point of capacity in the Southwest.

"This new interconnection and substation will greatly improve and add to our service in the fields," Mr. Lieberman said, "as it will provide a two-way source of power from Shreveport on the east and Trinidad on the west."

From the new substation, 66,000-volt feeders will run to the Friars Switch and Gladewater substations of the Southwestern Gas & Electric Co., providing the stations with two-way feed from Shreveport and from Trinidad. These stations are on a 66,000-volt loop that surrounds the field and which feeds an 11,500-volt network traversing the field in all directions. Another 66,000-volt line will run from the new substation to Cushing, where the Southwestern Gas & Electric Co. will resell power to the Texas Power & Light Co. for use at Cushing. That additional power will soon be needed in the field is indicated by the increases in output recorded by the Southwestern Gas and Electric Co., which serves practically the entire electric requirements of the area. On January 1 the demand for power in the oil fields proper totaled only 1,200 horsepower. On July 31 this had increased to 16,000 horsepower, a gain of 1,230 per cent in a little over 200 days. The power company anticipates that with well pumping under way the demand for power may increase tremendously. An estimate of 6,000 wells is conservative for the entire field. If one-third of these employ electric pumping at an average load of 35 horsepower, the total horsepower required in addition to present requirements would be in the neighborhood of 70,000. It is to care for this anticipated increase that the company is now strengthening its position in regard to power supply for the field.

LAYING DUVAL COUNTY LINE

SAN ANTONIO, Tex., Aug. 10.—Humble Pipe Line Co. is laying 21 miles 6-inch line to extend its line in Duval County from the Kohler Field to the south extension of the Schoolfield-O'Byrne Pool and will run the oil of the Duval Oil Corp. from that field to Aransas Pass where it will be delivered to the Crown Central Petroleum Corp. for shipment. The new line is to be completed by the last of August. The Duval Oil Corp. has four wells in the field and is starting to drill others and develop the field to fill a contract with the Crown Central.

ASKING FOR BIDS

The Continental Construction Co. of Chicago is asking for bids on 4-6-8 and 10-inch lateral lines in Texas.

TEXAS-EMPIRE TO LAY 12-INCH LINE FROM EAST TEXAS TO PORT ARTHUR

By Neil Williams

HOUSTON, Tex., Aug. 10.—Another major pipe line outlet for the East Texas Field has been assured with the announcement by the Texas-Empire Pipe Line Co. that it would lay a 12-inch line from Gregg County to Port Arthur, Tex. Although the line was not definitely determined upon until late in the week the company already is surveying for right of way and is receiving bids for pipe, equipment and work construction. The Texas Pipe Line Co. will lay the line.

Total length of the line will be 207 miles extending from a point in the Longview Field of Gregg County to tank farms and terminals of The Texas Company on the Port Arthur Ship Channel. Tentative plans call for construction of two stations which will give the line an initial daily capacity of between 45,000 and 55,000 bbls. Additional stations will be added as needed. Locations of the stations and routing have not been decided definitely although the line will follow as nearly straight a line as possible from Longview through Kilgore and Joiner and thence to Port Arthur, passing slightly to the east of the Sun-Yount Lee line now under construction.

Large Pipe Line Outlet

The Texas-Empire Pipe Line Co., which came into existence some two years ago with the laying of a major trunk line system from Oklahoma to Chicago, is owned jointly by the Texas Pipe Line Co. and the Empire Pipe Line Co. The new line is being laid principally to provide a tidewater outlet from East Texas for the properties of the Doherty interests and to relieve any possible congestion through the Texas Pipe Line Co.'s own lines.

This company is the thirteenth to provide through pipe line facilities out of East Texas totaling 15 entirely separate trunk line outlets for the fields. There are three other through lines out of the field but these connect with trunk systems which already serve as outlets for the other East Texas lines.

The new line will increase the through pipe line outlet capacity of East Texas to between 700,000 and 750,000 bbls. daily, exclusive of loading rack lines and

(Continued on Page 47)

PROGRESS REPORTED ON LYCOMING'S GAS LINE

WELLSBORO, Pa., Aug. 10.—Construction of the Lycoming Natural Gas Co.'s 110-mile 20-inch gas supply line northeast out of the Tioga gas field to Syracuse, N. Y., is progressing rapidly according to field reports. About 1 mile of the actual laying of pipe has been completed and the ditch digging has progressed to a point about 2 miles south of Lawrenceville, Pa.

The line construction, under contract with the Booth-Flynn Co., of Pittsburgh, Pa., will pass south of Lawrenceville, Pa., east of Corning, N. Y., and northward towards Ithaca, N. Y.

A large force of men is employed in clearing the rights of way, digging the ditch and laying the line. Specialized labor has been employed for the most part.

Reports state that field lines are being laid to tie in the E. W. Close wells in the Tioga Field. The ditch has progressed practically across the present proven area. All rights of way have not been obtained as yet, it was explained at Lycoming's Wellsboro offices, with work of this nature centering around the territory near Syracuse.

TO BUILD GATHERING SYSTEM

The Petroleum Pipe Line and Storage Co., organized by J. G. Reaves, president, of Tyler, Texas; W. F. Bridewell and J. M. Hayner, vice presidents; and R. S. Howard, secretary and treasurer, is constructing two 55,000-bbl. steel tanks in the Joiner Pool and will probably erect two similar sized tanks in the Gladewater area. The company has purchased 330,000 bbls. of oil, and will purchase at least 200,000 bbls. more. A gathering system will also be constructed to connect with these tanks. The oil will be sold when prices are advanced above the present 10-cent level.

BUILDING STORAGE

The Houston Oil Company is building two 80,000-barrel steel storage tanks on the S. S. Laird farm in the I. Ruddle survey in the Kilgore Pool, Rusk County, Texas.

CUMBERLAND PIPE LINE MAY BE SOLD FOR GAS

NEW YORK, Aug. 11.—Cumberland Pipe Line Co., one of the old Standard Oil units, is reported considering an offer for its properties from a prominent natural gas company, it is reported here.

While officials of the company have not made any official announcement regarding an offer, it is rumored here that Manufacturers Light, Heat & Power Co. is a bidder for the Cumberland properties. Manufacturers Light some time ago purchased part of the Southern Pipe Line Co.'s system in Pennsylvania for slightly less than $1,000,000.

The bid for Cumberland's line, it is believed, is in line with Manufacturers' reported plan for the establishment of an extensive natural gas transportation system which includes tapping the new natural gas field on the Pennsylvania-New York border.

TIDE WATER PLANNING AN EAST TEXAS LINK

NEW YORK, Aug. 11.—Tide Water Associated Oil Co. is planning the establishment of pipe line facilities to link its East Texas properties with the Gulf Coast. It is not known yet whether the company will build its own system or acquire an existing line.

Reports of this activity indicate that negotiations looking to Tide Water consolidation with Sinclair are not progressing as favorably as previously reported. Tide Water interests are reported unwilling to enter into a merger with Sinclair except on a share for share basis.

The company's pipe line activity in East Texas, which would further indicate its position as an independent unit, would be carried on through Tidal Refining Co., a subsidiary.

CONTRACT AWARDED

The Independent Pipe Line Co. has let a contract for 70 miles of 6-inch oil pipe line from Canton, Kans., to its pump station 12 miles north of Eureka, Kans., to Kelly Dempsey Co. of Tulsa.

NORTH CENTRAL LINES REPORT GOOD PROGRESS

CASPER, Wyo., Aug. 8.—North Central Gas Co. is making rapid progress on its natural gas distributing system from central Wyoming to towns in eastern Wyoming and western Nebraska. Distributing systems are about completed in several towns. Gas has been turned into the mains in Douglas and will soon be supplied to Wheatland and Guernsey.

The Sinclair oil pipe line has been conditioned beyond Guernsey and tested that far. It has been found remarkably free of leaks and is in good condition to receive the gas. The system was intended at first to extend only as far as Bridgeport, but it is now to be extended about 100 miles farther east.

The booster station east of Casper and near the White Eagle refinery is nearing completion and should be ready for operation within 15 days. It may be necessary to put in another booster station near Guernsey.

RUSHING TIOGA LINES BOTH NORTH AND SOUTH

CORNING, N. Y., Aug. 8.—Construction of the two lines north and south from the Tioga, Pa., gas field is progressing, according to reports from construction camps on both lines.

The Pennsylvania Power & Light Co.'s line, being laid by the Susquehanna Gas Co. south from Tioga toward Blossburg, Pa., is almost entirely under machine construction. Forty line foremen from Texas have arrived to take over direction of the work. The five river crossings between Tioga and Mansfield have been partly laid. Work has progressed six miles south of Blossburg.

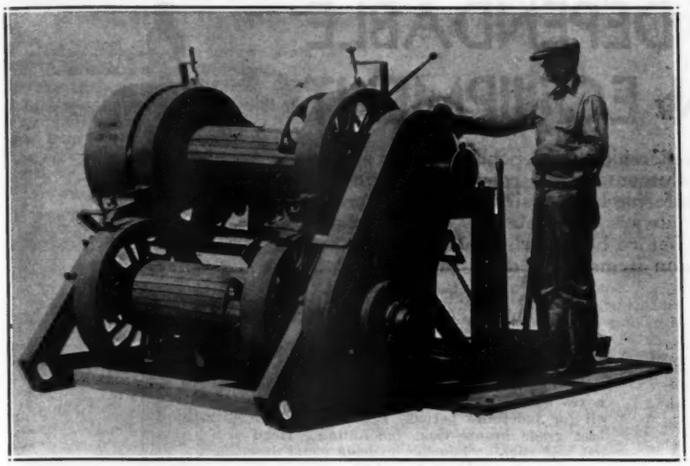
Construction of the Lycoming line, running northeast from the Tioga field to Syracuse, is being done almost entirely by hand labor. Welded pipe is not being used in this line. Instead flanged steel coupling connections are to connect the lengths of pipe. Construction in the Tioga Field has been started at Elbridge Corners and at a point near Lawrenceville. The 20-inch line is being laid from the outskirts toward the center of the field in order that the work may be done up hill, said to be the easiest method of laying such a line. Side lines are under construction to tie in the producing wells in the area.

NEW 10-INCH GATHERING SYSTEM

The Atlantic Pipe Line Co. is constructing a 10-inch gravity gathering system from the Sabine river north to the T. & P. Railroad in Gregg County, Texas, and from the railroad north to the Lathrop Pool has constructed a 6-inch gathering system. The latter line connects with the company's 70-acre farm located on the Wharton and Dixon farms in the Hudson and adjoining surveys. From this tank farm site, the main 10-inch line, which the company is now constructing, will run in a southeasterly direction along the eastern side of the Joiner Pool through Rusk County, thence south to Atreco near Beaumont, where the company has a terminal.

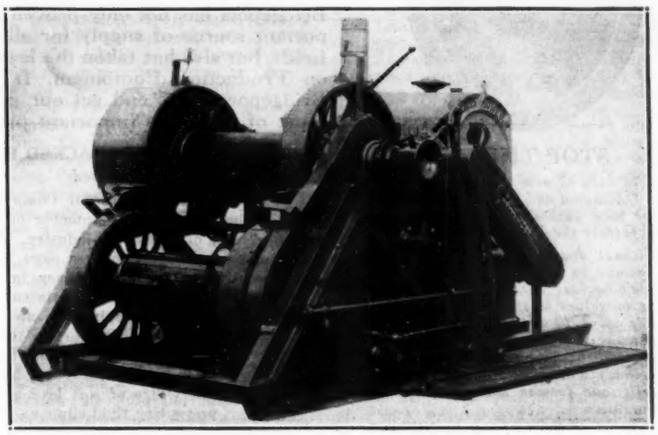
COLORADO SPRINGS LINE

Following the announcement that Colorado Springs city council had passed a $300,000 bond issue, to be used for extending the city's present system to connect with the line of the Colorado Interstate Gas Co. at the city limits, the latter company is constructing 10 miles of 8-inch line to connect the Amarillo-Denver trunk line with the Colorado Springs distribution system.



Powered with 50 H.P. Constant Speed Electric Motor

This gasoline-powered unit, now on demonstration in East Texas, is powered with Model YXC-3,60 H.P. (1000 r.p.m.) Hercules Engine.



This Winch On Demonstration in East Texas

CARDWELL ALL STEEL TRADE MARK

SKID TYPE **WINCH** MODEL ES-50 DOUBLE-DRUM

Built to meet ideas and suggestions advanced by a number of leading Petroleum Engineers, of this and foreign fields, who saw the need of powerful, portable, well servicing equipment of . . .

low first and operating costs

WIRE or WRITE

for information as to properties on which this unit may be seen at work.

WE ALSO MAKE MODEL FS-35 Skid Winch—powered with Ford or other light motor. It is now being demonstrated. Ask us where you can see it. Below are the FS-35 specifications.

Model FS-35, powered with a Ford motor at 1200 R.P.M., developing 28-HP, will deliver 74 line feet per minute and 12,500 pounds pull in low. In high, with 1945 pounds pull, this unit has a line speed of 475 feet per minute. Equipped with a free rolling, steel, tubular drum, Hyatt bearing mounted on 3¼" SAE steel shaft; drum capacity 3200 feet of ⅝" cable; brakes double equalizing, self-energizing with a total of 960 square inches of effective braking area. This unit weighs approximately 3200 pounds complete with motor and is mounted on a specially built Spencer Trailer of low cost, yet entirely adequate for this unit. Purchase of motor and trailer optional with buyer.

Specifications Model ES-50 Double-Drum

POWER.—Selective; either Internal Combustion Engine or Electric Motor. The ES-50 is designed for the maximum power delivered by a 50-H.P. constant speed electric motor. Other electric motors or any gasoline engine of equal power may be used as a power plant thereon.

DRUM CLUTCHES.—Dental Type; Jig Machined Jaws; Cast Steel.

SHAFTS.—3¼" diameter heat treated Nikrome Steel for upper drum and 4" diameter heat treated Nikrome Steel for lower drum.

BEARINGS.—Hyatt throughout; steel oiltight cages; self aligning pillow blocks.

DRUMS.—Cast Steel Flanges; Reinforced Steel Tube Barrels, Electric Welded; Lower drum is Hickory lagged; Hyatt bearings, free rolling.

Flange diameter	29½"
Length inside of flanges	38"
Barrel diameter lagged, lower drum	15"
Barrel diameter unlagged, upper drum	10¾"

BRAKES.—Double, Equalized, Self-energizing, Gatke molded block lined on 6"x29½" heat dissipating flanges. 960 square inches effective brake area for each drum.

TRANSMISSION.—Four-Speed Special Model Cotta Transmission, extra heavy duty, constant mesh, non-sliding gear type. (Specially built for All-Steel Products Manufacturing Company.)

SPROCKETS.—Cut steel, demountable rim type, bolted with steel SAE bolts to cast steel hubs.

CHAIN.—Diamond Roller Heavy Duty.

OILING.—Alemite System.

WEIGHT, etc.—5,750 pounds complete without power unit. Cubical contents export package, 406 cubic feet.

CONTROLS.—All in easy access of operator.

SPEEDS AND POUNDS PULL: (Based on motor speed of 900 R.P.M. and 50 H.P.)

	Speed	Line Feet Per Minute	Empty Drum Pounds Pull
UPPER DRUM	1st	106	14,300
	2nd	136	11,200
	3rd	150	10,100
	4th	192	7,940
	5th	296	5,120
	6th	380	4,000
	7th	554	2,730
	8th	708	2,140
	Reverse	142	10,650
	Reverse	182	8,320
LOWER DRUM	1st	76	19,600
	2nd	97	15,300
	3rd	107	13,900
	4th	136	10,850
	5th	212	7,020
	6th	270	5,500
	7th	394	3,750
	8th	505	2,950
	Reverse	101	14,700
	Reverse	130	11,400

CABLE CAPACITIES

UPPER DRUM		LOWER DRUM	
1/2" cable	7,500 feet	1/2" cable	6,700 feet
9/16" cable	5,940 feet	9/16" cable	5,070 feet
5/8" cable	4,820 feet	5/8" cable	4,290 feet
3/4" cable	3,340 feet	3/4" cable	2,990 feet
7/8" cable	2,450 feet	7/8" cable	2,190 feet
1" cable	1,880 feet	1" cable	1,680 feet

Note.—Line feet per minute and Pounds Pull based on Bare Drum. Line speeds and Pounds Pull subject to change to meet motor specifications and company requirements.

PHONES:
Local - - - 4-4381
L. D. 126 and L. D. 289

ALLSTEEL PRODUCTS MFG. CO.
WICHITA, KANSAS

Cable Address
ALLSTEEL
Bentley's Code

BRIDGEPORT DEPENDABLE PRODUCTION EQUIPMENT

Bridgeport has not only proven its leadership and dependability as an important source of supply for all requirements in the rotary and cable tool fields, but also has taken the lead in offering later designs and lower prices on Production Equipment. It will always pay you to "wire or phone Bridgeport first" and get our prices before buying elsewhere. Below are some of the more important production items offered by Bridgeport.

STOP THE DRILL?

With only 12 new wells started last week in Oklahoma and Kansas, why don't some one with authority order out the militia to protect the buyers from harm?

Without doubt if the "powers that be" continue to advocate "stop the drill" it won't be long now with all of us adjusting ourselves to the times, with so many easy ways to get into the oil business, that the drilling contractors and supply men will become so prosperous that new methods will have to be found to drill wells, and furnish material for the next generation.

Wouldn't it pay to keep on drilling in an orderly manner, and encourage new territory to be discovered? At least it might some day give the younger man a chance to be an OIL MAN.

With millions of cars, trucks, tractors and machinery demanding gas, and with homes, factories and power plants all over the land burning natural gas and oil, there IS an assured market for the future!

MOROIL SHOT PACKED PUMP

Patented

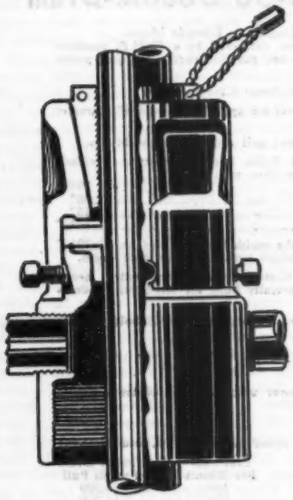
The new Model A Moroil Pump has been thoroughly tested on a number of wells before being offered to the industry. With minimum friction, it produces more fluid with less power. It is unnecessary to pull this pump until the balls and seats cut out. No cups to replace. Simply raise up the stuffing box and pour shot into the tubing. The shot drops into a taper in the top of the pump and is automatically mashed into a cone shaped wedge of soft lead around the plunger, preventing fluid slippage. This condition is maintained indefinitely, as the shot packing compensates for the wear.

Standard A.P.I. Balls and Seats and crowns throughout, no odd sizes. Standing valve is pulled with rods, stopping pulling of wet strings of tubing.

MOROIL TUBING SUPPORT

Patented

Stops danger of the pressure from well or compressor leaking around tubing support. Base screws down on casing, eliminating casing head and making tight seal. When tubing is hung by slips weight of tubing compresses rubber packing ring, which is inserted between upper and lower split steel ring, forcing rubber to contact around tubing. Four set screws in lower end of spider hold packing assembly absolutely tight, thereby preventing leaks when the flow starts with compressed gas or air. Made in all sizes to fit your casing and tubing.

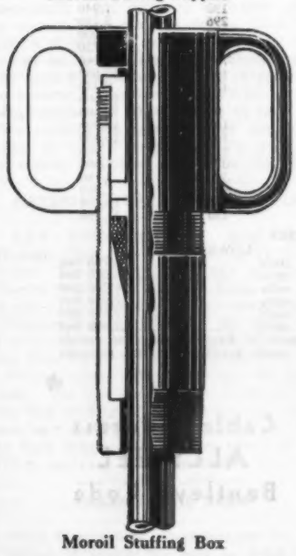


Moroil Tubing Support

MOROIL SHOT PACKED STUFFING BOX

Patented

The shot packing is forced around the polished rod by a taper, making a smooth soft metal bearing for the polished rod, as the shot in taper mash and stick together. Top made of malleable—superior to cast iron. Handles large enough for easy hand hold with gloves, giving ample room to release the hold. Nothing to wear out except taper and upper gland, which are made of grey iron and replaced at small cost. By changing taper and gland the Moroil will fit either size polished rod. All parts standard and always kept in stock. Not necessary to pack often. Made in 2", 2½" and 3" sizes.



Moroil Stuffing Box

OTHER BRIDGEPORT PRODUCTION ITEMS

Belting, New York Rubber Co., Triumph and Lagface. Wiccapee Stuffing Box Rings. Big Four Counter Balances, Hughes Christmas Trees, Hughes-Brown Tubing Heads. Allis-Chalmers Motors and Reduction Units. Guiberson and Burt Swabs. Williamsport Lines. Wall Manila Cordage. Tubing and Rods.

BRIDGEPORT STRAIGHT LIFT OIL BATH PUMPING HANGER

Patent applied for

FOR REGULAR BEAM. Saddle adaptable to any type of Beam. Strength and ease of adjustment outstanding features. Bearing boxes have oil reservoir which holds ample oil for indefinite period. Bearings cast of best grade bronze—last indefinitely. Head has self aligning knuckle insuring equal distribution of weight. Reins of 1" round steel, strong enough for deepest wells. Polish Rod Clamp of wedge type construction, requiring no tools to apply.

FOR UNDERSLUNG BEAM. All parts same as for Regular Beam with exception of Saddle, not used on Underslung Beam. No tools needed to assemble or disassemble, due to unique locking device. In case Rods fail to drop with Beam, entire Clamp will ride up and down in the reins, thus preventing a bent polish rod or a smashed Hanger. Hanger therefore cannot be kicked off the Beam. Oil Bath Boxes furnished for the Underslung Beam at slight additional cost. Specify make beam if oil boxes wanted.

Pumping Hanger

Polish Rod Clamp

Moroil Pump

Pumping Hanger Head

The head of the Pumping Hanger (shown above) has a self-aligning knuckle which assures equal distribution of the weight.

The Polish Rod Clamp (shown at upper left) is of wedge type construction. The harder the pull, the tighter it grips.

Your Supply Dealer Can Furnish Bridgeport Products

BRIDGEPORT MACHINE COMPANY
Wichita, Kansas

BRANCH STORES

Wichita, McPherson, Russell and El Dorado, Kansas; Oklahoma City and Seminole, Okla.; Pampa and Kilgore, Texas.

Foreign Representatives: Lucey Products Corporation, Woolworth Bldg., New York, N. Y.

L. A. DEVORE, ILL SHORT TIME, DIES IN CHICAGO

Lewis Austin DeVore, for two years in charge of the district advertising offices of The Oil and Gas Journal in Chicago, died Friday morning in a hospital of that city following a brief illness. Mr. DeVore was born in Neoga, Ill., on June 2, 1893, and moved with his family to Chicago in 1903.

For a short time Mr. DeVore was for-

L. A. DeVore

eign representative for the Goodyear Rubber Co. and was stationed at Honolulu. He left this position to enter the advertising field at Rochester, N. Y. At the entrance of the United States into the World War, Mr. DeVore enlisted with the air forces, in which he rose to the rank of captain. In 1919 he went into the advertising business for himself and a short time later accepted a position with the Commercial Art Engraving Co. of Chicago. He was one of the best known advertising men in the Chicago territory.

Masonic funeral services were conducted by Brotherhood Lodge No. 896, A.F.& A.M., Sunday afternoon at 2:30 o'clock in Chicago, and interment was in Neoga, Ill., Monday afternoon. Surviving Mr. DeVore are his widow, his parents, Mr. and Mrs. A. L. DeVore, of Chicago, and a brother, Kenneth, also of Chicago. Mr. DeVore was a member of Evanston Lodge No. 1316, B.P.O.E.

FIELD CONFERENCE OF KANSAS GEOLOGISTS

Final arrangements have been made for the fifth annual field conference of the Kansas Geological Society to be held August 30 to September 5 in the Wichita and Arbuckle Mountains of Oklahoma and the Ouachita Mountains of Oklahoma and Arkansas. The party will convene and start from Medicine Park, Okla., Sunday morning, August 30, and disband at Hot Springs, Ark., September 5.

Dr. Charles N. Gould is advisory leader for this trip and all details have been worked out by a committee made up of N. W. Bass, chairman, 919 Central Building; J. L. Garlough, 612 Brown Building, and E. A. Wyman, 614 Orpheum Building, Wichita, Kans. Those interested in making the trip should get in touch with the field conference committee, 412 Union National Bank Building, Wichita, Kans., at once and all information will be sent them immediately.

A comprehensive trip has been planned and all details for transportation and accommodations made. An illustrated guide book will be furnished those making the trip. One special feature will be an airplane flight of 100 miles over the Arbuckle Mountains, the Ardmore Basin and the Crimer Hills.

EAST TEXAS OPERATORS CONSIDER SHUTDOWN; MEET AGAIN ON AUG. 14

By L. E. Bredberg

TYLER, Texas, Aug. 6.—The possibilities of shutting down all producing properties in the East Texas district may be known on August 14 when a mass meeting of all producers, or representatives of producers, in the district will be held in Tyler to further discuss the proposition. This meeting has been called for 10 a. m., on that date, and will be held in the Fair Park Auditorium so as to accommodate the large number of men who are expected to attend.

S. A. Guiberson, Jr., well known independent operator of California and Texas, will probably preside at the meeting, as he was appointed chairman of the steering committee for the organization of the meeting.

Charles Roeser of Fort Worth, H. L. Hunt of Shreveport, T. J. Cannon, Gus Delaney, John Olvey, Major J. R. Parten, W. E. McKinney, J. O. Fox, Harry Reynolds, Roy Black, Earl W. Calloway and William G. Johnston, all operators or producers in East Texas, were named on the steering committee to assist Mr. Guiberson in laying plans for the meeting, and forming a general organization.

Marvin Kelley and Fred Stuckey of Longview, Malcolm Crim and Roy Laird of Kilgore, Judge Charles L. Brachfield and Mr. Kangerga of Henderson, and Gus Taylor and R. W. Farr of Tyler, were appointed to represent land and royalty owners at the general meeting, and obtain a big representation from that group.

All of the above appointments were made at the first shutdown meeting held at Tyler today when about 70 independent operators, the majority of them producers, or representatives of producers or small companies which have production in the district, convened to discuss shutting down, and entirely shutting in all production and drilling for an indefinite period in order to bring about an adjustment of chaotic conditions in the district, and help raise the price of the high grade crude oil which is being sacrificed at 10 and 15 cents per barrel.

W. E. McKinney of Tyler, called the meeting today and asked that Capt. J. F. Lucey attend. Captain Lucey also received wires from operators in Oklahoma, and was persuaded by a group of Texas operators to lend his support to this movement, although he was not the instigator. He took charge of the meeting at Tyler today, and will attend the meeting August 14. Captain Lucey has production in the East Texas district, and has been active in all movements to aid the district, and bring about better prices for the oil.

A resolution adopted at the meeting today follows:

"Whereas, excessive production and inequitable marketing of oil, which has been practiced in the East Texas Field, has brought about a chaotic condition that has caused such distress in the oil industry that those engaged in said industry in other sections of the country have found it necessary to take drastic steps to meet the situation with which they are confronted;

"Now, therefore, be it resolved that in order that the sacrifices made by those who have the best interest of the oil industry at heart shall not have been made in vain, a meeting of the operators and all those directly interested in the production of oil in East Texas be called to meet on the fourteenth day of August, 1931, to adopt a course which the producers of oil in East Texas are willing to pursue in co-operating with those who are making sacrifices to relieve the deplorable situation now existing."

Another resolution adopted which strikes at those operators who have been and will continue to sacrifice their oil at low prices to obtain ready cash and further their own selfish ends, follows:

"Whereas, the governor of the State of Oklahoma by executive order has caused the closing of all flush and semi-flush wells in that State in an effort to right the situation confronting the industry, and to properly conserve the mineral resources of that State, and whereas, from press reports it is stated that a number of the producers of oil in East Texas have offered to sell large quantities of oil at very low prices to the refiners in Oklahoma, thus nullifying the efforts of the governor of the State of Oklahoma;

"Now, therefore, be it resolved by the operators and producers present at this meeting, that we condemn the action of those who are willing for their own selfish ends, to disregard the rights of others and the splendid sacrifices made by our neighbors, in order to dispose of a few thousand barrels of 40 gravity oil at 10 or 15 cents per barrel."

A standing vote was taken at today's meeting in regard to immediately shutting down production, and 37 producers, or representatives of producing companies stated that they were for such a move.

The operators who met at today's meeting wired the following commendatory message to Governor Murray of Oklahoma:

"It is the desire of the operators and producers of oil in the East Texas Field, now assembled in a meeting today at Tyler, Tex., to express to you our admiration of your masterful and courageous action with reference to the problems confronting the oil industry in your State, and we especially commend your willingness to place the blame directly upon those who are willing to take ruthless advantage of their ability to profit by an unfortunate situation, and thus show to the world their intent to continue the depression of the oil business to the point where the majority who conduct the business and carry it on year after year have become entirely helpless.

"It is regrettable indeed that the same fine character of leadership and courage has not been shown in the State of Texas. We feel that had such leadership been exercised here, conditions existing today would have been averted."

M. S. ISHERWOOD DIES

LOS ANGELES, Calif., Aug. 8.—M. S. Isherwood, father-in-law of E. B. Reeser, president of Barnsdall and of the American Petroleum Institute, died here August 5. Born at Cambridge, Pa., June 19, 1850, Mr. Isherwood was 81 years old but still active, and at the time of his death he had his plans formulated to drill for the first time in California, the only big oil state in which he had not previously tried his fortune.

Mr. Isherwood drilled the first well in McKean County, Pennsylvania, in 1876, and formed a partnership with the late Theodore Barnsdall that lasted until the latter's death. While his operations extended to every important oil state, except California, his principal work was in Oklahoma and Texas. Shortly before his death he formed the Veteran Oil Co. to drill in East Texas.

CUTTING TORCH ANNOUNCED

The Bastian-Blessing Co., maker of welding and cutting equipment, announces a new cutting torch, light in weight, well balanced and economical in operation. The weight of the new Type CC cutting torch is 46 ounces with tip attached. It has an overall length of 20¼ inches from base of handle to end of tip nut. Wide adaptability as to fuel gases and range are characteristic of the new model. Just change the tip and it is ready for use with acetylene, hydrogen, carbohydrogen, oxyacetylene and the liquified petroleum gases such as butane, propane, etc.

PRAIRIE SHIPMENTS

The Prairie Pipe Line Co. reports crude oil deliveries of 2,626,498.91 bbls. during July, a daily average of 84,725.77 bbls.

TEXAS-EMPIRE TO LAY LINE TO PORT ARTHUR

(Continued from Page 44)

lines serving local refineries. Total outlet capacity will amount to above 900,000 bbls. daily when all projects are completed.

The Texas-Empire system will be entirely separate from that of the Texas Pipe Line Co., which also terminates at the same point, The Texas Company's Port Arthur tank farm. The Texas Pipe Line Co.'s system, which consists of 10-inch pipe from Gladewater to Longview and 12-inch from the latter point to Douglass Station in Nacogdoches County, where the line splits, one 8-inch line extending to Port Arthur by way of San Augustine Station on the North Louisiana-Port Arthur trunk and the other 8-inch line by way of Corsicana on the North Texas-Houston-Port Arthur system.

The latter system has been running at capacity constantly, handling 20,000 bbls. daily by way of Corsicana and 50,000 bbls. daily by way of San Augustine. A fire several weeks ago destroyed the San Augustine Station but temporary pumping equipment was set up quickly and movement of oil was uninterrupted. At present the company is building a complete new, modern station at that point as well as enlarging its two other stations, Jasper and Bunker, between San Augustine and Port Arthur, by the addition of a new Diesel driven pumping unit at each. Also, three new booster stations are being put in, one between each of those stations. Each will consist of two Diesel driven pumping units and will serve to increase the company's capacity through that line from 50,000 to 60,000 bbls. daily.

Thus, the Texas Pipe Line Co. and the Doherty owned lines will have a daily capacity out of East Texas to Port Arthur totaling better than 125,000 bbls. daily.

Of all the lines started out of East Texas only five remain to be completed. They are Sun Pipe Line Co. and Yount Lee Oil Co.'s 10-inch line from Gregg County to Beaumont; Shell Pipe Line Co.'s 10-inch line from Kilgore to Deer Park (Houston); Atlantic Pipe Line Co.'s 10-inch line from Kilgore to Atreco (Beaumont); Texas-Independent Pipe Line Co.'s 10-inch line from Longview to Norsworthy (Houston), and the Texas-Empire line.

The Sun-Yount Lee line is rapidly nearing completion with the northern half of the line already filled with oil. The entire project will be in operation some time this month. Shell is expected to finish its line during September. Atlantic only recently started actual construction while the Texas-Independent Pipe Line Co. is completing right of way for its project.

Contracts for the line were let to the following companies: Apex Construction Co., Tulsa; N. A. Saigh, San Antonio, and Gregg Construction Co., Longview, Tex.

RUMANIAN PRODUCTION REACHES HIGH RECORD

NEW YORK, Aug. 10.—Production of crude petroleum in Rumania for the first six months of 1931 totaled 3,392,000 tons, a new high record, and an increase of more than 16 per cent over the 2,910,000 tons produced during the first half of 1930. Production in the first six months of 1929 amounted to 1,365,000 tons.

While aggregate output for Rumania increased sharply in the first half of the year, a number of the larger companies put into effect curtailment programs which substantially reduced their yields. Astra Romana, which produced 540,299 tons during the first six months of the current year, showed a drop of approximately 29,000 tons from its output in the first half of 1930 and Steaua Romana showed a decline at 461,253 tons.

Romana-Americana produced 301,741 tons in the first half of the year, an increase of 81,936 tons over the corresponding period in 1930 and Concordia produced 451,060 tons, up 168,603 tons from its production for the first half last year.

WILDCAT OPERATIONS IN TEXAS PANHANDLE

(Continued from Page 41)

Saunders et al's No. 2 Sullivan, 822 ft. from W and 231 ft. from NE, 160 S, 264 ac. of N½, Sec. 136, Bl. 3, I. & G. N. Sur.; old well drilling deeper.....Rig up.
Sherwood's No. 1 Morse, 990 ft. from N line and 990 ft. W. line NW¼, Sec. 15, Bl. A-9, H. & G. N. Sur. .....Spud.
Steckoll & Reiger's No. 1 Davidson, 660 ft. N and W, Sec. 64, Blk. B-2, H.&G.N. Sur. .....S. D. 3,250 ft.
Steckoll & Reiger's No. 1 Short, 330 ft. S and W, Sec. 17, B. E. Chaney Sur. .....S. D. 3,052 ft.
Sullivan & Ochiltree's No. 1-A Morse, 330 ft. S and W, N½ NE, Sec. 15, Blk. A-9, H.&G.N. Sur. .....Rig; elevation 2,686 ft.
Tarber's No. 1 Saunders, 330 ft. N and W, Sec. 3, Blk. 1, B.S.&F. Sur. .....Location.

HUTCHINSON COUNTY

Danciger O. & R. Co.'s No. 1 Johnson, 330 ft. N and W, SE, Sec. 34, Blk. Y, A.&B. Sur. .....Spudded and S.D.
Deal O. & G. Co.'s No. 2 Sanford, 330 ft. N and E of N 80 ac., S 160 ac., Sec. 31, Blk. 46, H.&T.C. Sur. ...S.D. 450 ft.
Huber Prod. Co.'s No. 1 Johnson Bros. (Premier), 330 ft. N and E of W 40 ac., N 80 ac., NW, Sec. 3, Blk. Y, A.&B. Sur. .....S.D. 3,016 ft.
Skelly Oil Co.'s No. 1 Johnson Bros., 660 ft. S and W, SE, Sec. 30, Blk. Y, A.&B. Sur. .....S.D. 3,115 ft.
Stanolind O. & G. Co.'s No. 2-B Pitcher, 990 ft. S, 330 ft. E, W½ SW, Sec. 19, Blk. M-21, T.C.R.R. Sur. ....Drlg. 2,765 ft.
Timms-Deatch's No. 4 Moore, 330 ft. N and W, Sec. 134, Blk. 4, I.&G.N. Sur. .....Rig.

LIPSCOMB COUNTY

Okla. Public Service Co.'s No. 1 C. W. Jones, NE SW, Sec. 100, H.&T.C. Sur. .....T.D. 5,003 ft.

LUBBOCK COUNTY

Center Oil Co.'s No. 1 Bowles Ranch .....Small S.O. 1,133-40 ft.; S.D. 4,-167 ft.

MOORE COUNTY

Interstate's No. 1 Nield, C NE, Sec. 18, Blk. 44, H.&T. C. Sur. .....Location.
Magnolia Pet. Co.'s No. 1 Jones, 330 ft. N, 330 ft. E, Sec. 170, Blk. 3-T, T.&N.O. Sur. .....Drlg. 3,200 ft.
Pollard et al's No. 1 Hall, 330 ft. S and E, NE, Sec. 131, Blk. 3-T, T.&N.O. Sur. .....Rig on ground.
Sunray Oil Co.'s No. 1 Rupert, 660 ft. N, 330 ft. E, NW, Sec. 191, Blk. 3-T, T.&N.O. Sur. .....Cellar.
Sunray Oil Co.'s No. 2 Jones, 330 ft. N and W, W½ SW, Sec. 164, Blk. 3-T, T.&N.O. Sur. .....Rig on ground.
Texas Interstate P. L. Co.'s No. 1-23 Thompson, C N½ NE, Sec. 23, Blk. 44, H.&T.C. Sur. .....Location.
Texas Interstate P. L. Co.'s No. 1-33 Sneed, C SW, Sec. 33, Blk. 6-T, T.&N.O. Sur. .....T.D. 2,655 ft; I.P. 16,250,000 ft. gas.
Texas Interstate P. L. Co.'s No. 1-37 Sneed, C NW, Sec. 37, Blk. 6-T, T.&N.O. Sur. .....Location.

MOTLEY COUNTY

Matador Oil Corp.'s No. 1 Owens, C NE, Sec. 10, Blk. G, B.&B. Sur. .....S.D. 530 ft.

OLDHAM COUNTY

Amalgamated German-American Oil Corp.'s No. 1 Norton, 330 ft. S and E, Sec. 12, T.&N.O. Sur. .....S.D.400 ft.
Chambers et al's No. 1 Herring, CNL, Sec. 20, Blk. S, G.C.&S.F. Sur. .....S. D. for fuel.

POTTER COUNTY

Red River Gas Co.'s No. 6-A Bivins, 1,344 ft. S, 1,089 ft. W, SE, Sec. 37, Blk. M-20, G.&M. Sur. .....Rig up.

ROBERTS COUNTY

Chicken Creek Oil Co.'s No. 1 Ledrick, 330 ft. N and W, Sec. 55, Blk. C, G.&M. Sur. .....Fishing 850 ft.
Travis et al's No. 1 Cunningham, 330 ft. S and W, Sec. 74, Blk. M-2, H.&G.N. Sur. .....S.D. 2,650 ft.

WHEELER COUNTY

Clarity et al's No. 1 Porter, 330 ft. S and W, SE, Sec. 2, Blk. A-9, H.&G.N. Sur. .....S.O. 1,960 ft; S.D. 2,005 ft.

WILDCAT OPERATIONS IN WEST TEXAS

(Continued from Page 41)

The Texas Company's No. 1 B. H. Barnham, 357 ft. from S and 330 ft. from W lines of Sec. 194, Blk. 1, B.B.&C. Sur. .....Location.

GAINES COUNTY

Texas Consolidated Oil Co. et al's No. 1 Jones, 2,310 ft. from NE Sec. 4, Blk. A-8, P.S.L. Sur. .....Total depth 4,680 ft.

GARZA COUNTY

Pandem Oil Corp.'s No. 1 Justice, 330 ft. from S and W of Sec. 12, Blk. 4, H.&G.N. Sur. .....Spudded and shut down.
Penny & Posey's No. 1 Justice, 1,980 ft. from S and 1,650 ft. from E of Sec. 25, Blk. 6, E.&G.N. Sur. (3,500-ft. cable tool test) .....Total depth 3,202 ft.

HOWARD COUNTY

Green O. & R. Co.'s No. 1 Denman, 990 ft. from S and 2,310 ft. from W Sec. 14, Blk. 29, Twp. 1s, T.&P. Sur...Spudded and shut down.

HUDSPETH COUNTY

Henshaw's No. 1 Love, C NE Sec. 9, Blk. 67½, P.S.L. Sur. .....Shut down 690 ft.
Patillo & Welch's No. 1 Briggs, 330 ft. from S and W Sec. 13, Blk. 73, Twp. 7, T.&P. Sur. .....Shut down 690 ft.
Theison's No. 1 University, 2,050 ft. from S and 2,225 ft. from E of Sec. 17, Blk. E .....Spudded 35 ft. and shut down.

IRION COUNTY

Davis et al's No. 1 Suggs, 1,560 ft. from S and 925 ft. from W Sec. 2,061, Blk. 28, H.&T.C. Sur. .....Total depth 2,152 ft.; underreaming 10-inch casing.
Denny & Andrews' No. 1-A Tankersley, 200 ft. from S and 2,000 ft. from E of Sec. 709, J. P. Imhoff Sur....Drlg. 215 ft.
Ellis et al's No. 1 Nutt, 1,350 ft. from N and 450 ft. from E of Sec. 694, Kheikenholm Sur. .....Drlg. 1,280 ft.
Stanolind Oil & Gas Co.'s No. 1 Williams, 1,320 ft. from S and E of Sec. 1,196, T.T.R.R. Sur. .....300 ft. oil in hole from 4,155-63 ft.; recemented casing; total depth 5,950 ft.
Straughn & Texannati Oil Co.'s No. 1 Tankersley, 150 ft. from S and 750 ft. from W of Sec. 4, Gonzales County School Land .....Plugged back to 1,233 ft.; total depth 1,506 ft.
Straughn & Adkins Bros.' No. 1 Lee, 1,080 ft. from W and 420 ft. from N of Sec. 729, C. Kaiser Sur. .....Drlg. 510 ft.

JONES COUNTY

Abers et al's No. 1 Burton, 150 ft. from S and 175 ft. from E of 43.4-acre tract in G. Martinez Sur. .....Shut down 1,005 ft.

LOVING COUNTY

Adams et al's No. 1 Wichmann, 330 ft. from NE and 2,310 ft. from SE of Sec. 84, Blk. 1, W.&N.W. Sur. ...Top black lime 4,282 ft.; show gas.
Ervin & Mahres' No. 1 Thrope, 2,310 ft. from E and 330 ft. from S Sec. 46, Blk. 53, T.&P. Sur. .....Shut down 810 ft.
Black's No. 1 Lynd, 990 ft. NE and 330 ft. SE of Sec. 3, Blk. 2, W.&N.W. Sur. .....Shut down 400 ft.
Eppenauer et al's No. 1 Johnson, 330 ft. from NW and SW of Sec. 86, Blk. 1, W.&N.W. Sur. .....Drlg. 2,710 ft.
Falbre & Evans' No. 1 Dean, 330 ft. from NE and 990 ft. from NW Sec. 79, Blk. 33, H.&T.C. Sur. .....Shut down 2,500 ft.
Lewis & Slagel's No. 1 Johnson, 330 ft. from N and 1,650 ft. from W Sec. 6, Blk. 56, Twp. 1, T.&P. Sur...Spudded and shut down.
Lockhart & Co.'s No. 3 Bowen & Wells, 330 ft. from NE and SE of Sec. 92, Blk. 1, W.&N.W. Sur. .....Shut down 3,385 ft.
Martin et al's No. 2 Ramsey, 990 ft. from SE and 2,310 ft. from SW Sec. 83, Blk. 1, W.&N.W. Sur. .....Drlg. 4,080 ft.
Slagel Drlg. Co.'s No. 1 Cartwright et al, 2,310 ft. from S and 990 ft. from W Sec. 1, Blk. 57, Twp. 1, T.&P. Sur. .....Total depth 3,182 ft.; top pay 3,175-80 ft.; swabbing 25 bbls. per day.
Tennant et al's No. 1 Martin, 990 ft. from NW and SW Sec. 66, Blk. 1, W.&N.W. Sur. .....Shut down 1,400 ft.

MENARD COUNTY

Priest's No. 1 Sorrel, 1,000 ft. from E and 200 ft. from S cor. Sec. 132, E.L.R.R. Sur. .....Shut down 2,860 ft.

PECOS COUNTY

Dittman's No. 1 Sanford, 330 ft. from NW and 1,650 ft. from NE of Sec. 55, Blk. 10, H.&G.N. Sur. .....Moving in material (standard).
Slaughter et al's No. 1 Sun Yates, 60 ft. S of Sun Oil Co.'s No. 1 Yates, Sec. 59, Blk. 1, I.&G.N. Sur. .....Location.

REEVES COUNTY

Cunningham et al's No. 1 Wright, 1,320 ft. from S and W Sec. 58, Cassel's Sur. .....Spudded and shut down.
Humble Oil & Ref. Co.'s No. 1 Boimorhea Livestock Co., 1,320 ft. from N and 1,320 ft. from W Sec. 33, Blk. 5, H.&G.N. Sur. .....Drlg. 4,193 ft.
James & Milton's No. 1 Patterson .....Drlg. 1,565 ft.
Lee O. White et al's No. 1 Hershersor, 330 ft. from N and W lines of Sec. 5, Blk. 51, Twp. 10, T.&P. Sur. ..Shut down 5,044 ft.

RUNNELS COUNTY

Dutton et al's No. 1 Dean, 5,475 ft. from NE and 1,048 ft. from NW in J. Heil Sur. No. 519 .....Shut down 2,335 ft.

SCHLEICHER COUNTY

Eastland Oil Co.'s No. 1 Joe Tisdale, C Sec. 29, Blk. M, G.H.&S.A. Sur. .....Shut down 2,965 ft.
Wesner et al's No. 1 Nicks, 2,310 ft. from N and 2,362 ft. from E of Sec. 77, Blk. LL, T.C. Sur. .....Total depth 4,065 ft.; underreaming 8¼-in.
George Wilson's No. 1 Page, Sec. 40, Blk. L, 1,290 ft. from N, 1,570 ft. from W, G.H.&S.A. Sur. .....Shut down 5,053 ft.

SCURRY COUNTY

G. E. Dickman and R. B. Pender et al's No. 1 F. C. Davis, 1,000 ft. N and 1,770 ft. W of SE cor. of Sec. 275, Blk. 2, H.&T.C. Sur. .....Shut down 5,100 ft.
Scurry County Oil Exchange's No. 1 Earnest, 2,310 ft. from N and W Sec. 68, Blk. 3, H.&G.N. Sur. .....Spudded and shut down.
Seifert & Dibble's No. 1 T. M. Blackburn, 2,310 ft. from N and 2,310 ft. from W line of Sec. 153, Blk. 97, H.&T.C. Sur. .....Shut down 3,500 ft.
Simon & Brock et al's No. 1 Cruse, 2,310 ft. from S and E Sec. 119, Blk. 97, H.&T.C. Sur. .....Show oil 1,793, 1,820, 1,850 ft.; shut down 2,500 ft.

TERRELL COUNTY

Big Bend Oil Co.'s No. 1 Bassett, C NW Sec. 155, Blk. D, M.-K.-T. Sur. .....Shut down 2,669 ft.
Keck Pecos Trust Co.'s No. 1 Hamilton, C Sec. 6, Georgetown Ry. Sur. .....Shut down 3,150 ft.
Miller Bros.' No. 1 Allison & Burke, C NW cor. Sec. 10, Blk. 176, T.&P. Sur. .....Shut down 120 ft.
Mid-Kansas Oil & Gas Co.'s No. 1 Goode, 2,152 ft. from E and 330 ft. from S Sec. 26, Blk. 161, G.C.&S.F. Sur...Shut down 6,120 ft.
Jones et al's No. 1 Pankenham, C SE NW Sec. 43, Blk. B-2, C.C.S.D.&R.G.N.G. Sur. .....Drlg. 2,485 ft.

TOM GREEN COUNTY

Belding & Dutton's No. 1 Norsworthy, 2,640 ft. from S and 587 ft. from E of John McNeese Sur. .....Shut down 760 ft.; show oil and gas 725 ft.
Mintex Oil Co.'s No. 1 Campbell Est., 446 ft. from S and 630 ft. from W of Sec. 180, Dist. No. 11, S.P. Sur....Shut down 1,994 ft.
Pratt & Hancock's No. 2 Lewis, 100 ft. N and 330 ft. E of most northerly SW cor. of Joshua S. Grant Sur. No. 2 .....Shut down 200 ft.

UPTON COUNTY

Mintex Oil Co.'s No. 1 Lane, 2,310 ft. from N and 1,650 ft. from W Sec. 36, Blk. 1, M.-K.-T. Sur. .....Swabbed hole dry for 60 bbls. oil and hole filled up 1,000 ft. in 7 hours; shut down 2,325 ft.; swabs 10 bbls. per hour.
Rankin et al's No. 1 Cordova Union Land, 660 ft .from N and E Sec. 6, G.C.&S.F. Sur., 1¼ miles S of Rankin .....Drlg. 2,353 ft.

VAL VERDE COUNTY

Independent Operators' No. 1 Whitehead, SE SE Sec. 10, Blk. 4, I.&G.N. Sur., elev. 1,175 ft. .....Shut down 5,420 ft.
O. O. Owens' No. 1 Mills, Sec. 128, Blk. 1, I.&G.N. Sur., elev. 2,130 ft. .....Shut down 6,780 ft.

WARD COUNTY

Bradford et al's No. 1 Carson, 990 ft. from NE and SE Sec. 26, Blk. 5, H.&T.C. Sur. .....Making estimated 5,000,000 ft. gas.
Bradford & Abell's No. 2 Boogher, 1,160 ft. from NW and 800 ft. from SW Sec. 11, Blk. 5, H.&T.C. Sur. ....300 ft. oil in hole; shut down 2,216 ft.
Bradford's No. 1 York, 330 ft. from NE and SE of Sec. 10, Blk. 34, H.&T.C. Sur. .....Fishing 2,285 ft.
Beckley et al's No. 1 Johnson, 4,140 ft. from NE and 990 ft. from SE Sec. 8, Blk. 32, H.&T.C. Sur. .....Shut down 2,240 ft.
Boogher's No. 1 fee, 235 ft. from SE and 3,553 ft. from NE Sec. 11, Blk. 5, H.&T.C. Sur. .....Location.
Buster Black's No. 1 Hall & Roberts, 990 ft. from NE and 1,650 ft. from NW Sec. 17, Blk. 32, H.&T.C. Sur...Shut down 1,800 ft.
Central Oil & Gas Co.'s No. 1 Barrow, 330 ft. from NW and 1,263 ft. from SW Sec. 55, J. W. Jackson Sur. .....Underreaming 8¼-in. casing 1,595 ft.
H. V. Greer's No. 1 Carr, 150 ft. from NW and 510 ft. from SW Sec. 12, Blk. 5, H.&T.C. Sur. .....Spudded and shut down.
Gulf Prod. Co.'s No. 8 O'Brien, 2,310 ft. from S and 330 ft. from W lines of Sec. 194, Blk. 1, B.B.&C. Sur...Location.
Hankinson et al's No. 1 Emery, 3,090 ft. from SE and 510 ft. from SW Sec. 26, Blk. 5, H.&T.C. Sur. .....Shut down 2,238 ft.
Moran & Miles' No. 1 Boogher, 3,603 ft. from NE and 1,303 ft. from SE Sec. 11, Blk. 5, H.&T.C. Sur. .....Drlg. 385 ft.
O'Quinn et al's No. 1 Cummins, 4,300 ft. from NE and 330 ft. from SE of Sec. 11, Blk. 5, H.&T.C. Sur.....Flows 120 bbls. per day; total depth 2,217 ft.
R. F. Owens' No. 1 Lee, 1,344 ft. from NW and 4,533 ft. from SW Sec. 1, J. Howe Sur. .....Rigging up standard tools.
Pat Moran's No. 1 Sweatt, 1,470 ft. from SW and 150 ft. from NW Sec. 12, Blk. 5, H.&T.C. Sur. .....Top pay 2,169 ft.; total depth 2,225 ft.; to run tubing; flowing 70 bbls. oil daily.
Peck & Fuglar's No. 1 Merritt, 3,063 ft. from NE and 1,693 ft. from SE Sec. 11, Blk. 5, H.&T.C. Sur. .....Shut down 785 ft.
Rector Oil Co.'s No. 1 Smith, 1,320 ft. from N and E, Sec. 22, Blk. A, G.M.M.B.&A. Sur. .....Shut own 3,602 ft.
Rexford et al's No. 2 Johnson, 2,300 ft. from SE and 4,450 ft. from NE Sec. 11, Blk. 5, H.&T.C. Sur. .....Spudding.
Shipley et al's No. 5 Hayslett, 2,490 ft. from SE and 1,980 ft. from SW Sec. 17, Blk. 5, H.&T.C. Sur. .....Shut down 2,520 ft.; 1,500 ft. oil in hole; waiting on tubing.
Shipley et al's No. 1 Monroe, 330 ft. SE SW Sec. 3, Blk. 1 .....Shut down 4,545 ft.
Sturm & Simms Oil Co.'s No. 1 Jones, 2,310 ft. from NE and 330 ft. from SE Sec. 25, Blk. B-29, P.S.L. Sur.....Shut down 840 ft.
White et al's No. 1 Burtner, 150 ft. from NE and 515 ft. from SE of Sec. 8, Blk. 33, H.&T.C. Sur. .....Shut down 755 ft.

WINKLER COUNTY

Liner Drlg. Co.'s No. 1 Campbell, 350 ft. from N and E cor. Sec. 2, Blk. B-5 .....Shut down 4,640 ft.

Maximum Pumping Production

OUR engineering Department would like to study conditions in your wells for the purpose of recommending equipment that will produce the most oil at the least expense.

It has been our privilege to assist production men in many fields to establish higher recovery records at lower costs. Our successful experience under widely varied conditions and the fact that we represent the world's foremost manufacturers of Quality Equipment makes our services very valuable although you do not obligate yourself in any way.

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JONES & LAUGHLIN —Plain and Upset End Seamless Steel Tubing, made by the "Double Pierced" Process, assuring uniformity, smoothness, strength.

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Oklahoma's Flush Fields Shut Down

Governor Murray's Shutdown Order Effective in All Prorated Areas. State's Production Expected to Show Large Decline Coming Week

By W. A. Spinney
Staff Correspondent, Oklahoma Fields

Governor Murray's shutdown order reduced the State's daily average production for the week ending August 8, to approximately 420,850 bbls. of oil. It was a decline of nearly 4,000 bbls. a day from the previous week. Some express the opinion if the shutdown order continues for another week the State's daily average production will be again reduced to less than 300,000 bbls. a day for the week ending August 15.

A survey of the State reveals that approximately half of the 3,106 wells included in Governor Murray's shutdown order have been actually shut down over the week end. In the Oklahoma City Field from 12 to 15 wells have been producing during the week, and a few wells in both the Tatums and West Chandler Field were still flowing. In the Greater Seminole area nearly 1,300 wells have been exempted because of salt water intrusion. It is estimated that approximately 1,600 wells in the State have been shut down.

The daily production has been reduced regardless of the number of wells affected, since all of the wells that have been shut in are large producers. It has been estimated that from 250,000 to 300,000 bbls. of oil has been removed from the market in Oklahoma.

Fields Shut Down

On August 4, Governor Murray ordered all the prorated oil areas in the State of Oklahoma shut down. On that same day he ordered the Oklahoma National Guard to the Oklahoma City Field to enforce the order. Taking over control of the field, where a total of 810 wells has been completed, he shut down 766 wells, excepting 12 wells which were classified as gas wells. The other flush fields in the State were shut down during the balance of the week. The National Guard moved to the Greater Seminole area the day following the shutdown at Oklahoma City. The fields in the State included in Governor Murray's shutdown order were Oklahoma City, Allen, Wanette-West Asher, Bowlegs, Carr City, West Chandler, Old Earlsboro, East Earlsboro, South Earlsboro, East Earlsboro extension, Earlsboro Townsite, Konawa, Little River, East Little River, Maud, Mission, Sasakwa, Searight, Seminole, East Seminole, West Seminole, St. Louis, Tatums and Wewoka Pools.

The governor's proclamation of martial law was not released until late in the afternoon of August 4. Lieutenant Colonel Cicero I. Murray was placed in charge and he started shutting down the wells shortly after the noon hour in the Oklahoma City Field. The companies submitted to the order without resistance. The guardsmen were sent to the Champlin Refining Co.'s leases first, where the wells were shut in. They moved on to other producing properties as rapidly as possible and by 6 o'clock the entire field was shut down.

The first wells to be shut in were the Champlin Refining Co.'s Nos. 1 and 2 Seal in Section 2-11-3w. The field umpire, Otto Bradford, served as an escort leading the guardsmen to the various wells and leases in the Oklahoma City Field. The orders were that drilling was not to be stopped nor should anything be done to injure the producing wells. National guardsmen were stationed at some of the wells, with orders to keep everybody off the premises.

Gas Wells Exempt

The wells classified as gas wells will furnish fuel to the drilling tests. Two wells which are being reconditioned and one other well which is making such a considerable amount of salt water that it would impair the well should it be shut in, were allowed to produce.

The gas wells which were permitted to produce include the following: Shell Petroleum Corp.'s No. 5 Petty, in Section 30-11-3w; Wirt Franklin Petroleum Corp.'s No. 3 Theimer, in Section 2-11-3w; Sinclair Oil & Gas Co.'s Nos. 1 and 2 Stamper in Section 19-11-2w; Indian Territory Illuminating Oil Co.'s No. 1 A. Bodine in Section 19-11-2w; Cromwell-Franklin Oil Co.'s No. 7 Trosper Park in Section 13-11-3w; Mid-Kansas Oil & Gas Co.'s No. 5 Fortson in Section 24-11-3w; Anderson-Prichard Corp.'s No. 2 Gibbons, in Section 2-11-3w; and Capitol Producing & Refining Co.'s No. 1 Refinery, in Section 3-11-3w. The water wells which were opened include Wirt Franklin Petroleum Corp.'s No. 5 Theimer and No. 1 Eacock. The reconditioning wells include Champlin Refining Co.'s No. 2 Seal, Indian Territory Illuminating Oil Co.'s No. 4 Corff and No. 1 Wellman and Julian Oil & Royalty Co.'s No. 1 Walker.

The order does not affect the so-called stripper wells in the State with an estimated daily average of 150,000 bbls. a day. It does apply to approximately 3,106 wells in the flush fields with an estimated production of 383,000 bbls. a day. The stripper wells are classified as making 25 bbls. a day or less.

Seminole Closed in

Most of the wells in the prorated areas in the Greater Seminole fields were all shut down by the night of August 5, and the balance of the areas affected by the shut down order were shut in the following day. The Tatums Field in Carter County and the West Chandler Field in Lincoln County were visited later in the week and were shut down in the same manner. The first advance of the troops on the producing properties was halted when the field superintendents agreed to shut down. The troops being used in the Greater Seminole area were mobilized at Konawa, Wewoka, Holdenville and Wetumka, but only a few from each town were used, and only guardsmen who were not employed were summoned for duty.

Colonel Murray instructed representatives of the major oil companies operating in the Greater Seminole area to submit their recommendations to him during the week on wells they believed should be exempt from the shut down order, stating the policy of the state officials would be one of conservation and that they would not do anything to damage any of the wells.

In a survey of the Greater Seminole area it was revealed that the Carter Oil Co. was employing the largest number of men and that it had the largest daily production in that area under proration with a total of 17,388 bbls. of oil a day and that the Sinclair Oil & Gas Co. was second with a total daily average production under proration of 13,400 bbls. of oil. There were only five drilling wells in the entire field, two being located in the Earlsboro Pool, two in the Seminole Field, and one at Maud Pool.

Oklahoma City Inactive

During the last half of the week the Oklahoma City Field was quiet while the troops patroled the leases. The only activity was that of the mud pumps at the drilling wells. It was reported only one gasoline plant was in operation in the field. Several gas wells were furnishing fuel to the drilling wells and to the natural gas pipe lines which serve the local industries and other cities in the county. Two wells making a large amount of water were producing in an effort to keep the water from the oil sand and to prevent contamination of nearby wells. Three other wells were being reconditioned and making but little oil; they are expected to be closed down in a few days. Under the governor's order shutting down the field only 27 wells were exempt in the field from the shut down.

Gasoline Plants and Refineries

The shutdown order affects the gaso line plants in the Oklahoma City Field and practically all were shut down Tuesday afternoon. One or two of the plants will continue to operate on a part-time basis in order to circulate the gas from wells that are allowed to remain open. The capacity of the plants in the field is estimated at 435,000,000 feet of gas a day.

Several small refineries in the Oklahoma City Field were operating at the time this was written, but each had only a small amount of crude oil in storage and would probably be forced to shut down within a week if the shutdown order should last that long. It is estimated that there is in storage in the field approximately 850,000 bbls. of oil counting that in lease batteries and pumping station tanks. Part of this oil is being held by companies until the market price of oil is one dollar a barrel.

In the Greater Seminole area some of the company representatives estimated the order would be invoked against only about 35 to 50 per cent of the total number of wells.

The day following Governor Murray's shutdown order in the Oklahoma City Field the production from that field was 1,600 bbls. which was mostly gasoline. The pipe line companies did not start their day's runs until about noon the day following because of confusion in the interpretation of the executive order.

Federal Court Decision

The decision of the Federal Court at Guthrie, Wednesday afternoon, upheld the oil proration laws of the State of Oklahoma, although the penalty provision of the statutes was declared unconstitutional. Two of the federal judges also upheld the validity of the orders of the Oklahoma Corporation Commission requiring the proration of oil wells in flush pools in the State. With the orders held effective, the court vacated a previous order in which it had stayed enforcement of the commission's orders against the Champlin Refining Co.

The Champlin Refining Co. had obtained a temporary restraining order against the Corporation Commission and the attorney general had sought receivership for four wells in the Oklahoma City Field and the Oklahoma County District Court had issued a temporary ruling in favor of the State. Under the federal court stay, the Champlin Refining Co. has been producing 10,000 bbls. of oil a day.

New Oklahoma City Development

The opening of additional territory in the Oklahoma City Field was overshadowed by Governor Murray's shut-

(Continued on Page 90)

WILDCAT OPERATIONS IN OKLAHOMA

(Descriptions are East and North unless marked otherwise)

NORTHERN OKLAHOMA

ALFALFA COUNTY

Company, farm and location—	Remarks:
Smith Brothers' No. 1 Forbes, SE cor. NW NW Sec. 12-27-11w	Shut down 1,232 ft.
J. W. Bailey's No. 1 Acre, SW cor. NE Sec. 14-24-11w	Shut down 5,502 ft.

ATOKA COUNTY

Campbell's No. 1 Baird, NW NE SW Sec. 31-1-13	Rig.
Edgerton Edwards' No. 2 Rowland, SE NE NW Sec. 6-1-15	Rig.

BECKHAM COUNTY

Price-McFann's No. 1 Webster, C SW SW Sec. 34-8-26w	T. D. 2,344 ft.; plugged back to 1,890-1,900 ft.; 1,500,000 ft. gas.
Mid-Continent's No. 1 Schaff, C NE SW Sec. 22-11-22w	Waiting on cement to set 430 ft.
Mid-Texas Co.'s No. 1 Sidell, NE cor. SW SW Sec. 17-2-22w	Shut down 2,550 ft.
White et al's No. 1 Green, SW cor. Sec. 34-10-24w	Shut down 3,575 ft.

BLAINE COUNTY

Washoma Oil Co. et al's No. 1 Phillips, C NW SW Sec. 13-19-10w	Shut down 5,115 ft.

CADDO COUNTY

Abernathy & Brown's No. 2 Houston, Sec. 24-6-13w	Shut down 1,115 ft.

COAL COUNTY

McCraw Oil Co.'s No. 1 Ward, NE SE Sec. 35-1-8	Drlg. 1,830 ft.
Whitney et al's No. 1 Miller, SE NE Sec. 10-2-8	Shut down 760 ft.

COMANCHE COUNTY

G. W. Stogner's No. 1 Doebel, C SW SW Sec. 3-3-9w	Shut down 1,450 ft.

LE FLORE COUNTY

H. E. Dowd et al's No. 1 Unknown, SE NE Sec. 17-3-22	Drlg. 1,020 ft.

GARFIELD COUNTY

E. L. Love et al's No. 1 White, SE cor. NW Sec. 9-24-6w	Shut down 5,850 ft.

GARVIN COUNTY

Malarnee et al's No. 1 Phillips, NE SW SE Sec. 24-2-2w	Shut down 4,830 ft.
Skinner's No. 1 Elrod, SW cor. Sec. 13-2-3	Shut down 1,120 ft.

GREER COUNTY

Dovell et al's No. 1 Capell, NW cor. Sec. 1-7-22w	5,000,000 ft. gas 1,455-65 ft.; T. D. 1,760 ft.
French's No. 1 Murphy, SW NW Sec. 23-7-21w	Shut down 1,645 ft.

HARPER COUNTY

Sinclair Oil & Gas Co.'s No. 1 Howell, C SW SW Sec. 14-26-24w	20,000,000 ft. gas 5,350-5,400 ft.; T. D. 5,539 ft.; shut down; sprayed 50 bbls. gasoline.

HASKELL COUNTY

Sooner Oil & Gas Co.'s No. 1 Unknown, C NE SE Sec. 9-7-20	Drlg. 1,620 ft.
Bowers Oil & Gas Co.'s No. 1 Black, Kent Townsite, SE SW SW Sec. 31-8-20	1,000,000 ft. gas 710-50 ft.; T. D. 850 ft.
Ault et al's No. 1 Harrison, CWL SE NE Sec. 14-9-19	Shut down 650 ft.
Ault et al's No. 1 Hall, NW SW SW Sec. 14-9-19	Shut down 2,000 ft.
Ault et al's No. 1 Hall, SE NW Sec. 25-9-19	Shut down 200 ft.
Holden's No. 1 Phillips, SE cor. Sec. 3-9-18e	Shut down 1,860 ft.
Marion Oil's No. 1 Sanders, NW NE NW Sec. 10-9-18e	Shut down 2,387 ft.

HUGHES COUNTY

Wright et al's No. 1 Ott, SE SW Sec. 15-5-11	Shut down 1,845 ft.

(Continued on Page 143)

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Production in Kansas May Be Shut In

Allowable Output From the Ritz-Canton Area Was Increased During the Week. Another Pipe Line Under Construction to the Field

By W. A. Spinney
Staff Correspondent, Kansas Fields

The estimated production from the state for the week ending August 8, shows an increase of approximately 3,500 bbls. a day over the previous week. A survey reveals the state produced approximately 102,000 bbls. a day the same seven days. The increase in the state's production is believed to be due to the Ritz-Canton area in McPherson County, where new wells are being completed daily.

The Ritz-Canton pool will have another pipe line outlet. The Phillips Petroleum Co. announces it will build a pipe line into the area. The immediate construction of a line to connect the Ritz-Canton-Decker field into the company's main line that extends to Kansas City, will start at once. The new line will be a 6-inch and will connect into the main line near Thrall pump station in township 23-10, Greenwood County, a distance of approximately 85 miles. The Phillips Petroleum Co. announcement came immediately after the shut down in Oklahoma, where all the prorated wells in the state are shut down. The company expects to purchase 4,000 bbls. of oil a day.

Another wildcat test found oil after the operators believed the test was a dry hole. It unexpectedly developed a showing of oil, and is believed to have opened an entirely new producing area in the western part of the state, in Rush County. The well is Dewey & Mitchell and others' No. 1 Greenawalt, C SW Section 17-19-16w. The production was found in the Silicious lime at 3,825-58 feet. The hole was about full of oil and the operators were planning to make a production test. At a total depth of 3,820 feet the owners believed the prospects were discouraging and indications were that the formation was near the granite wash, which is believed to be barren of oil. They were preparing to measure the hole and abandon, meanwhile the well was drilled 5 feet deeper and a showing of oil was found. The well was then drilled to 3,835 feet and oil began rising in the hole from the Silicious lime. At 3,835 feet the formation changed from the Silicious lime to a conglomerate. It was still in the mixture of Silicious lime and conglomerate when the drilling stopped. Other companies with interests in the vicinity are the Texas Company, Mid-Kansas Oil & Gas Co. and Arkansas Fuel Co. The well is about 35 miles southwest of Russell, and 20 miles west of Great Bend.

Ritz-Canton Allowable Up

The allowable output of the Ritz-Canton area in McPherson County was increased during the week to 16,000 bbls. a day. The construction work on the White Eagle Oil & Refining Co.'s 6-inch pipe line was completed and the line was tested. The company announced it would start handling 8,000 bbls. of oil a day from the field. The company has been taking around 4,500 bbls. The allowable output of the field was increased to 15 per cent of the potential by Umpire Lloyd Pickrell. It may be again increased in a short time. After the new potential tests are completed many believe the actual output of the field will be found to be less than the recent estimates.

The new pipe line connects the Ritz-Canton Field with the company's refinery at Augusta in Butler County. The White Eagle Oil & Refining Co. may increase its shipments from the field in a short time to 10,000 bbls. a day.

The White Eagle Oil & Refining Co. is expected to build a combination 8 and 10-inch line from its Kemper pump station near Towanda to the company's tank farm north of Augusta to replace the present line which is expected to prove inadequate.

New potentials will be taken in the Ritz-Canton area from August 17 to 24. The wells in the field will be allowed to produce 24 hours under the unit plan to establish a potential on which to base the allowable output of the field. The Viola lime wells in the Ritz-Canton area will take their potential on the pump. The operators with chat wells in the field will have the choice of two methods of taking potentials on their wells by the decline curve or by allowing them to flow wide open.

In the past the minimum allowable was 25 bbls. per well and that was increased to 50 bbls. minimum per well. This will allow operators with production in the Decker gas area with wells that make both oil and gas to produce their wells. Several wells in the area make from 25 to 50 bbls. of oil a day with considerable gas.

The Ritz-Canton Field is the only field in the State under curtailment. It is estimated to have a potential of 125,000 bbls. a day from approximately 75 wells.

One of Largest Wells

One of the largest wells completed in the Ritz-Canton Field was Stanolind Oil & Gas Co.'s No. 4 Flood, NW cor., Section 6-20-2w, which flowed 6,832 bbls. of oil in 24 hours from the chat at 2,927-69 feet. The well is on the west side of the original Ritz Pool, and indicates the west side of the area will prove to be the most prolific area in the field. The taking of new potentials in the Ritz-Canton area will be watched with considerable interest because it has the largest production of any pool in the State at this time. The gas production from the Decker gas field which adjoins the Ritz-Canton Field on the northwest and the seven producing gas wells on the northeast side of the Ritz-Canton Pool, is now the largest in the State. It has surpassed the Hugoton gas field in open flow during the past month. It is estimated the open flow of gas from the Decker gas field is now better than 900,000,000 feet a day while the Hugoton gas field has an open flow of only 700,000,000 feet a day.

Discussing Shutdown

The Public Service Commission of Kansas during the week asked Marvin Lee, chairman of the oil advisory committee under the oil proration law, to furnish the commission with a list of the oil pools in the state and a complete list of the producers operating in the state. It is believed that the commission intends to make a careful study of the oil situation to determine whether Kansas can be of any real help to the oil producers. The wells producing less than 15 bbls. of oil a day are not to be included in the list.

Indications were during the week that a complaint would be filed with the Public Service Commission of Kansas, seeking an order to shut down 90 per cent of the state's production, the complaint alleging that the present price of 42 cents a barrel for crude oil constitutes waste. A member of the Commission stated that when the complaint was filed it will be set for hearing within 20 days. Action of the Public Service Commission of Kansas may depend on developments in Oklahoma, where the Governor has ordered all prorated areas shut down.

A 90 per cent shut down order for Kansas would reduce the state's production to approximately 10,000 bbls. a day. The potential production of the state is estimated at 200,000 bbls. a day and the 22,000 producing wells have been producing around 100,000 bbls. a day.

In a recent meeting of approximately 300 oil producers a voluntary restriction of production was agreed upon, with a receivership action to follow in all instances, where the proration order is violated.

More Stringent Policy

The Public Service Commission indicates it will adopt within a short time a more stringent policy in dealing with the Kansas oil situation. After a conference with Marvin Lee, chairman of the state's oil advisory committee, and the special counsel for the committee the commission advised it would wait a few days before taking any action in order to observe developments in Oklahoma.

One of the members of the Public Service Commission said he was convinced the price of crude oil was too low and that it should be at least 73 cents a barrel at the wells in Kansas and with the Oklahoma producing wells shut down the law of supply and demand would justify one dollar a barrel.

An investigation into the difference paid for crude oil in Kansas, where discrimination is alleged by some of the operators, was requested by some of the members of the Public Service Commission. One operator in a complaint to the commission stated that some of the purchasing companies paid only 33 cents for oil from two leases in which he was interested while oil from the adjoining leases brought 37 cents a barrel from the same purchasing companies. The matter was referred to the state's attorney-general and the state's advisory committee, asking for an investigation to determine if there was price discrimination.

New Development

A survey of the new development work in the state for the week ending August 5, indicates that the older areas are still being tested for oil and gas. In Butler County, which has been quiet since the Empire Oil & Refining Co. ceased operations about two months ago on the Koogler properties, the Flint Hills Oil & Gas Co.'s No. 1 Martin, C W L NW NE Section 27-28-4, is spudding. The test is in the south end of the Augusta field in territory spotted with dry holes. The present test is being drilled for gas. The Flint Hills Oil & Gas Co. owns other gas production for which a market has been found.

Greenwood County's new test is in the south end of the Seeley Pool. The location was announced by the Stanolind Oil & Gas Co. and others' No. 6 Ellis, SW. cor. NW Section 27-23-11. It is the northwest offset to a well recently completed by Markus & Gore and others, which has been shut down to await the return of higher crude oil prices. Development work is expected to start in a few days.

Cowley County

In Cowley County two new locations were announced together with three other new operations. The locations were Harry Allen's No. 1 Sackett, C NW SE Section 12-32-5, and Wilbur Bros.' No. 2 McCullom, NE cor. SW NE, Section 13-33-4. The other operations were Lehman and others' No. 1 Pierce C SE SW Section 32-32-5, which was drilled and completed for 250,000 feet of gas from sand at 638-53 feet. Same operators No. 1 Dowler, C NW NW, Section 34-33-4, found a hole full of water in sand at 673-714 feet and was abandoned at 852 feet. Wilburn Bros.' No. 2 McCullom, NE cor. SW NE, Section 13-33-4, was completed for 280,000 feet of gas from sand at 613-22 feet.

Billings and others' No. 1 Witt, NW cor. SW SE Section 4-14-15w, Russell County, is another new location. In

(Continued on Page 88)

WILDCAT OPERATIONS IN KANSAS

(Descriptions are East unless marked otherwise)

BARTON COUNTY

Company, farm and location—	Remarks:
Syndicate Oil Co.'s No. 1 Boertz, NW SE SE Sec. 13-18-12w	Shut down 2,440 ft.
Skelton Oil Co.'s No. 1 Ott, C SE SE Sec. 16-19-14w	Shut down 2,515 ft.
McCool et al's No. 1 Tsern, NW SE NE Sec. 12-20-11w	Shut down 1,600 ft.

CHASE COUNTY

Borden et al's No. 1 Atkinson, NW SE Sec. 13-18-7	Rig on ground.

CHAUTAUQUA COUNTY

Leighty et al's No. 1 Lemert, NE SE Sec. 36-34-9	Drlg. 350 ft.

CLAY COUNTY

Crystal Oil et al's No. 1 Tivler, SW cor. Sec. 19-8-3	Shut down 2,700 ft.

COFFEY COUNTY

Heyburg's No. 1 Kroft, SE SW SE Sec. 30-22-14	Shut down 1,565 ft.

COWLEY COUNTY

Fisher et al's No. 1 Hurt, C SW SE SE Sec. 11-34-3	Rig.

DICKINSON COUNTY

Severs et al's No. 1 Lavengood, NE SW Sec. 13-13-2	Drlg. 4,026 ft.

ELLSWORTH COUNTY

Keyes Bros.' No. 1 Gregory, SW cor. Sec. 23-16-9w	Drlg. 1,500 ft.
Alyward et al's No. 1 Stratman, SE NW SE Sec. 1-17-10w	Silicious 3,255-71 ft.; 117 bbls. 2 hrs.; shut in; est. 2,000 bbls.; no pipe line connection.
Aladdin Pet.'s No. 1 Stoddenberg, C SW Sec. 22-16-10w	Silicious lime 3,332-47 ft.; est. 1,500 bbls. a day; shut in.
Milton et al's No. 1 Kester, SE NE Sec. 6-14-9w	Drlg. 3,350 ft.

FORD COUNTY

Carter Oil Co.'s No. 1 Everett, C NE Sec. 22-29-21w	Drlg. 5,530 ft.
Swain et al's No. 1 Taylor, C NW Sec. 21-25-24w	Shut down 5,105 ft.

GRAHAM COUNTY

Schleimeyer et al's No. 1 Clark, SW NE NE Sec. 11-9-25w	Shut down 4,648 ft.

KINGMAN COUNTY

Skelly Oil Co.'s No. 1 Miles, NE cor. Sec. 30-27-10w	1,625-40 ft. 2,000,000 ft. gas; at 2,005-20 ft. 6,000,000 ft. gas; at 2,133-42 ft. 2,000,000 ft. gas; showing oil 3,335 ft.; T. D. 3,441 ft.; shut down; estimated at 600 bbls. a day.

HARVEY COUNTY

Liggett et al's No. 1 Davis, SW SE NE Sec. 7-24-1	Rig.
J. P. Flannigan's No. 1 Sheridan, C SW Sec. 32-22-1	Drlg. 2,050 ft.

LINCOLN COUNTY

Buck et al's No. 1 Schulz, C SE NE SW Sec. 19-11-6w	Rig on ground.

MARION COUNTY

Midwell's No. 1 La Master, NW cor. Sec. 31-22-4	Shut down 650 ft.

MORTON COUNTY

Hydraulic Oil Co.'s No. 1 State Land, NW SE Sec. 22-34-43w	T. D. 3,640 ft.; shut down.

MORRIS COUNTY

Urschel et al's No. 1 Bersuch, NW SE NW Sec. 10-17-7	Machine.
Hankerson et al's No. 1 Cessman, SW SE Sec. 24-16-9	Underreaming 2,473 ft.

(Continued on Page 143)

Seek Shut Down in Louisiana-Arkansas

Operating Companies Endeavoring to Get Land Owners to Agree to Curtailment Until Crude Oil Prices Are Increased

By J. R. Crumpton
Staff Correspondent, Louisiana-Arkansas

SHREVEPORT, La., Aug. 10.—Major operating companies in the North Louisiana and Arkansas Fields are making an effort to reach an agreement with land and royalty owners, whereby the fields may be shut down for 12 months or until such time as the market price of crude will exceed the lifting charges. This is evidenced by the fact that the Ohio Oil Co. has representatives in the Haynesville Field trying to reach such an agreement with the fee owners. This company operates 210 of the 405 producing wells in this field, and it is understood that the other major operators are co-operating with the Ohio Oil Co. in effecting a complete shutdown. The 140 wells in the Bellevue Field of North Louisiana and practically all of the nine producers in the Urbana extension of the El Dorado Field of Arkansas have been closed by the simple process of the buyers withdrawing from those fields. How far this movement will extend and the number of fields to be effected remains for future developments, but it is generally conceded that the operators cannot continue to pump these stripper wells with the cost of lifting exceeding the gross revenues.

There were 3,249 producing wells in North Louisiana, as of July 1, with a total daily average production of 35,690 bbls., or an average of 10.98 bbls. per well. The severance tax in Louisiana for the highest grade of oil is 11 cents per barrel, with a top market price at present of 42 cents per barrel. Arkansas had 3,546 producing wells on July 1, almost half of which were listed as Smackover heavy which is bringing an average of 30 cents per barrel on the present market. The daily average production of the Arkansas fields on July 1 was 44,220 bbls., or an average of 12.4 bbls. per well. The severance tax in Arkansas is 2.6 per cent of the gross value of the oil.

Drilling at Low Ebb

Drilling activities in this division, composed of North Louisiana, Arkansas, Mississippi and seven border counties of East Texas, have been curtailed to a minimum. At this writing, there are 141 drilling wells, including wildcats and those in the proven areas, in this division. Of this number, the week's drilling report shows 97 shut down for various causes, leaving only 44 actively drilling.

The week's completions total only four with two good gas wells and two dry holes. The Jackson Field in Hinds County, Mississippi, came through with another good gasser with the completion of Love Petroleum Co.'s No. 3 Maley, Section 15-5n-1e, with an estimated initial flow of 35,000,000. The total depth of the well was 2,445 feet. The Richland Field furnished the other gas well with Southern Carbon Co.'s No. 4 Rosengrant & Ducomb, Section 19-17-6, gauging 7,336,800 feet with 765 pounds rock pressure from 2,450 feet. In Cass County, East Texas, R. G. Baker found his No. 1 W. R. Carver, John Lick Survey, dry at 3,760 feet and the test was abandoned. William A. Stephens' No. 1 Foster & Billingsly, J. Bowlin Survey, in Shelby County, East Texas, was abandoned in shale at 1,540 feet. The well did not get a thorough test and did not reach the depth where pay should be encountered as the rig had to be moved to fill a contract on another location in the same county.

There were no new developments of interest either in proven territory or any of the wildcats. In Caddo Parish, Rhodessa district, the United Gas Public Service Co. is coring at 5,582 feet in its No. 1 M. K. Smith, Section 33-23-16. This is several feet deeper than pay has been encountered in the other wells in that field, but the elevation is higher on the present well, which is a northern extension, and the operators expect results from around 6,000 feet. Two other new tests have been started in Caddo recently. The Pyramid Oil & Gas Co., a Belchic & Laskey subsidiary, spudded in on its No. 2 Breard, Section 10-18-16, and surface casing is being set at 220 feet. This well is in the shallow gas area of the 900-foot level near the Texas line and in close proximity to the east of the Waskom gas field in Harrison County, East Texas. The new gas area was discovered by these operators about one year ago, and several good gas wells and several failures have resulted.

A wildcat that will be watched with interest is W. P. Wallace and others' No. 2 Cunningham-O'Conner in Section 15-17-14. This test is practically within the city limits of Shreveport, near the State Fair Grounds, and is the second test to be drilled in that vicinity.

Louisiana Operations

Other North Louisiana drilling operations follow: DeSoto Parish, S. S. Meek, trustee's No. 1 Wagner, Section 5-12-14, topped chalk at 1,690 feet and now coring at 2,065 feet; Rapides Parish, the Pelican Natural Gas Co. is rigging up its No. 1 Long Bell Lumber Co., Section 3-1n-3w, a 3,600-foot test on a block of 90,000 acres. In the Richland Field there are four wells on top of the pay and ready to test. The Hope Production Co.'s No. 1 McCoy heirs, Section 29-16-6, testing at 2,440 feet; Southern Carbon Co.'s No. 5 Rosengrant & Ducomb, Section 24-17-5, is arranging to test at 2,440 feet; United Gas Public Service Co. has set 6-inch casing and will drill plug on its No. 5 Marshfield, Section 19-17-6, and No. 1-A Wayne Land & Lumber Co., Section 24-17-5. In this same parish, the Natural Gas Co. is rigging up its No. 1 Singletary, Section 20-18-7. This well was started in November, 1929, by the Reuban Oil & Gas Co. and abandoned at 897 feet after setting 15-inch casing at 208 feet. In the Zwolle Field of Sabine Parish two new wells were started during the week, W. M. Coates' No. 1 Bowman-Hicks in Section 2-7-12, and the Dengail Oil & Gas Co.'s No. 1 Nulton in Section 1-7-13, the latter an offset to the new producers in the southwestern extension. R. L. Gay made a drill stem test on his A Wayne Land & Timber Co., Section 10-8-13, from 3,585-3,638 feet showing about 500 feet of light high grade oil with 600 feet of salt water. This test is about 6 miles northwest of the nearest Zwolle production in the vicinity of the town of Noble. In the proven area, the Magnolia Petroleum Co.'s No. 1 Peterson, Section 10-7-11, tested 25 bbls. from 2,432 feet and the hole will be deepened to increase the flow. The Texas Company has drilled plug of 6-inch casing set at 2,338 feet and is arranging to test at 2,424 feet on its No. 1 Nabours, Section 2-7-11. In Union Parish, T. P. Fields and Ruston Drilling Co.'s No. 1 Summitt Land Co., Section 21-21-1w, topped the red beds at 2,928 feet, and a drill stem

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WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Rotary operations unless otherwise designated)

NORTH LOUISIANA

BIENVILLE PARISH

Company, farm and location—	Remarks:
Arcadia Drlg. Co.'s No. 1 Atkins, 175 ft. W, 120 ft. N, SE cor. NW NE, Sec. 27-13-6	Drlg. rock 1,355 ft.

BOSSIER PARISH

Andrews & Davlin's No. 1 Nattin, 100 ft. N, 250 ft. W, C, Sec. 15-23-14	Flowing by heads 2 bbls. 2,890 ft; arranging to deepen.
Flint River Oil Co.'s No. 1 DeMoss, 200 ft. S and E, NW cor. SE NW, Sec. 22-22-13	Bailed dry 3,046 ft; W.O.
Dr. W. N. Hankin's No. 1 Newell, 300 ft. S and W, NE cor., Sec. 12-19-11	S.D. 1,185 ft.
D. L. Perkins' No. 1 Ardis & Co., 1,127 ft. N, 198 ft. E, SW cor., Sec. 13-15-11	S.D. 1,000 ft.
Rombaugh et al's No. 1 Allison, SW SE, Sec. 10-19-13	S.D. 1,600 ft.

CADDO PARISH

United Gas Public Service Co.'s No. 1 M. K. Smith, 660 ft. S, 2,640 ft. W, NE cor., Sec. 33-23-16	Coring 5,532 ft.
W. P. Wallace, tr.'s No. 3 Cunningham-O'Conner, 210 ft. S, 940 ft. E, NW cor., Sec. 15-17-14	Drlg. 1,405 ft.

CALDWELL PARISH

Carter Bell's No. 1 Taylor, 150 ft. S, 150 ft. E, NW cor. NE SE, Sec. 17-14-4	Derrick.
Hudson et al's No. 1 Burton, Sec. 25-12-2e	S.D. 2,950 ft.

CATAHOULA PARISH

National Drlg. Co.'s No. 1 Marsh McMiller, 70 ft. N, 100 ft. W, C, Sec. 28-9-6	T.A. 3,097 ft.

DESOTO PARISH

Keatchie O. & G. Co.'s No. 1 Hallie Smith (was H. E. Weichert's), NE SE, Sec. 31-14-15	S.D. 2,350 ft.
S. S. Meek, tr.'s No. 1 Wagner, 300 ft. S and E, NW cor. SE NW, Sec. 5-12-14	Drlg. 2,065 ft.
Ben Merritt, tr.'s No. 1 Wallums, NE cor. SW SW, Sec. 19-12-12	Set 6-in. csg. 2,580 ft; T.D. 2,657 ft.
E. T. Oakes' No. 1 R. H. Bryant et al 300 ft. N and W, SE cor. NE NW, Sec. 30-13-15	S.D. 2,011 ft.
Rellitt Oil Co.'s No. 1 Gannon hrs., 300 ft. S and E, NW cor. NW NE, Sec. 12-11-16	S.D. 1,410 ft.
Walters-Nicholson, tr.'s No. 1 Jim Guy, Sec. 3-11-15	S.D. fuel 700 ft.

NATCHITOCHES PARISH

W. M. Coats' No. 1 Collins, 730 ft. N, 50 ft. E, C, Sec. 28-9-10	T.A. 4,091 ft.
J. W. Cooper et al's No. 1 Cooper, NW SW, Sec. 25-11-10	S.D. 3,156 ft.
Cooper et al's No. 2-A Cooper, C SE SE, Sec. 32-11-10	S.D. 1,518 ft.
C. M. Talley et al's No. 1 C. M. Talley, 1,980 ft. W, 660 ft. S, NE cor. SE, Sec. 29-11-10	Tested dry; S.D. 1,380 ft.

RAPIDES PARISH

Pelican Nat. Gas Co.'s No. 1 Long Bell Lbr. Co., 330 ft. N and E, SW cor., Sec. 3-1n-3w	Rigging up.

RED RIVER PARISH

La. Oil Dev. Co.'s No. 2 La. Delta Pecan Co., 2,950 ft. S, 300 ft. E, NW cor., Sec. 27-13-11	Spudded in; S.D. 50 ft.

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LOUISIANA-ARKANSAS PROVEN AREAS

NORTH LOUISIANA

CADDO PARISH—PINE ISLAND

Company, farm and location—	Remarks:
J. T. McCormick's No. 1 C. B. Christian, 330 ft. S, 300 ft. W, NE cor. SW, Sec. 27-21-15	S.D. 1,335 ft.
Shreveport Oil Corp.'s No. 2-B Muslow, 1,000 ft. S, 300 ft. E, NW cor., Sec. 32-21-15	S.D. 2,135 ft.
Simplex Oil Co.'s No. 1 Youree-Glassell, 500 ft. N and E, C, Sec. 13-20-15	Set 10-in. 150 ft; S.D.

CADDO PARISH—GREENWOOD AREA

Pyramid O. & G. Co.'s No. 2 Breard, 733 ft. S, 660 ft. E, NW cor., Sec. 10-18-16	Began Aug. 2; drlg. 180 ft.

MOREHOUSE PARISH

Bahan & Bahan's No. 4 Feazel, 900 ft. W, 300 ft. S, NE cor., Sec. 2-20-4	Location.

OUACHITA PARISH

Ark.-La. P. L. Co.'s No. 7 McEnnery, 700 ft. N and W, SE cor. SE, Sec. 29-19-4e	Set 7-in. 2,126 ft.

RICHLAND PARISH

Hope Prod. Co.'s No. 1 McCoy hrs., 660 ft. W, 1,980 ft. S, NE cor. NW, Sec. 29-16-6	Drlg. 2,440 ft.
Southern Carbon Co.'s No. 4 Rosengraut & Ducomb, 1,320 ft. S, 660 ft. W, NE cor., Sec. 19-17-6	Completed for 7,336,800 ft. gas 2,450 ft.
Southern Carbon Co.'s No. 5 Rosengraut & Ducomb, 3,300 ft. N, 2,089 ft. W, SE cor., Sec. 24-17-5e	Arranging to test 2,440 ft.
Southern Carbon Co.'s No. 6 Rosengraut & Ducomb, 2,640 ft. E, 1,980 ft. N, SW cor., Sec. 19-17-6	Rigging up.
Southern Carbon Co.'s No. 9 Rosengraut & Ducomb, 1,320 ft. N, 660 ft. E, SW cor., Sec. 18-17-6e	Rigging up.
United Carbon Co.'s No. 1 Faust Lbr. Co., 1,320 ft. S, 1,980 ft. E, NW cor. SW, Sec. 13-17-5	Set 8-in. 921 ft.
United Gas Public Service Co.'s No. 5 Marshfield, 660 ft. N and E, SW cor., Sec. 19-17-6e	Set 6-in. 2,300 ft.
United Gas Public Service Co.'s No. 1-A Wayne Land & Timber Co., 1,320 ft. S, 697 ft. E, NW cor., Sec. 24-17-5e	Set 6-in. 2,300 ft.

SABINE PARISH—ZWOLLE

Roy Baker's No. 1 Sabine Lbr. Co., Sec. 1-7-12	S.D. 2,440 ft.
W. M. Coates' No. 1 Bowman-Hicks, 330 ft. S and W of C, Sec. 2-7-12	Began Aug. 4; drlg. 50 ft.
Dengail O. & G. Co.'s No. 1 Nulton, SE cor. NW NE, Sec. 1-7-13	Derrick.
Hawkins et al's No. 1 Moran, Sec. 1-7-11	400 ft. oil in hole 2,620 ft; W.O. S.R.
O. A. Gautier et al's No. 1 Mischell, 330 ft. E, 150 ft. N, SW cor. SE NW, Sec. 30-8-12	Tested dry; S.O. 2,400 ft.
Hawkins & Antoon's No. 1 Newton, Sec. 1-7-11	S.D. 2,550 ft.
Hudson & Bird's No. 1 Walden, 480 ft. N, 300 ft. E, SW cor. SW NE, Sec. 26-8-11	S.D. 101 ft.
Zeke Lohman's No. 1 McCormick, 660 ft. E, 330 ft. N, SW cor. NE SW, Sec. 2-7-11	S.D. for fuel 1,500 ft.
Loring Oil Co.'s No. 17 Bowman-Hicks, 1,600 ft. S, 275 ft. W, NE cor., Sec. 16-7-12	Set 9⅝-in. 2,525 ft.
Lyons & Neely's No. 1 Duggan, NW SE, Sec. 14-7-11	Location.

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Goliad County Test Not So Encouraging

Deeper Coring Fails to Benefit Well Which Is Plugged Back. Lease Deals Recorded Indicating More Activity

By B. D. Stevenson
Staff Correspondent, Southwest Texas Fields

SAN ANTONIO, Tex., Aug. 10.—Southern Crude Oil Purchasing Co. and V. F. Neuhaus instead of plugging back No. 1 Pettus in Goliad County cored 10 feet deeper to 4,307 feet but without benefiting the well and have now plugged back to the first sand at 4,282-87 feet and are completing the well again. Below 4,287 feet the core showed shale and some sand but with water in it. This test is located 15 miles northeast of the Pettus Pool in Goliad County and is in the same sand and had the earmarks when first tested on drill stem of opening a new pool. It does not look now as though it would be a big well but it adds considerable to the Pettus sand trend and it is natural to conclude will result ultimately in some additional drilling in that lease block.

More new locations in the northeast end of the Balcones fault zone section south of the Brazos River, considerable trading over the country and especially the closing of a number of deals in the Laredo district constituted the bulk of the activity the past week. The idea still prevails and is growing stronger with oil men that in spite of chaotic conditions the oil industry will straighten itself out in six months or so and that there will be a demand for good lease blocks and they are making their plans accordingly. Activity is at a lessened pace than it has been in years gone by but is increasing a little as compared with the months immediately passed.

In the Laredo district Alworth Brothers closed four deals aggregating $178,000, all in the Escobas-Muckelroy Pool in northeastern Zapata County, one being the sale of 80 acres of proven property to E. K. Bateman for $24,000 to be paid for in oil and cash. Harry Fansler has closed tentatively some deals aggregating about $224,000 in cash and oil.

Zapata County Locations

Two new locations have been made in Zapata County in the Killam-Cuellar Pool north of the Jennings gas field, one of the locations by Killam and one by McLennan and both in Survey 277. O. W. Killam made location and is drilling No. 40-B Cuellar 325 feet from No. 41 Cuellar, and A. R. McLennan has made location for No. 3 Cuellar 300 feet east of his No. 1 Cuellar.

McCaldin, Owen & Newton have made location for their No. 1 F. Guerra in Zapata County in Survey 161, 4 miles northeast of the Escobas-Muckelroy Pool and just south of the group of several gas wells in a little pool discovered by the Magnolia. It is about 4 miles west of the north end of the Randado Pool in Jim Hogg County, and has spudded in.

O. W. Killam has also made a location for his No. 1 Bruni in the Borrego grant about 12 miles west of the Mirando Valley Pool and about the center of the north part of the county. Some wildcatting was done in that part of the county some months ago by O. W. Killam and also by the National Oil Co., the National getting some encouraging showings of oil and gas at shallow depth.

In the northern end of Duval County, Duval Oil Corp. has made location for its No. 3 Bishop Land & Cattle Co., 330 feet from the north line and 1,650 feet from the west line of Survey 135 in the south extension to the Schoolfield-O'Byrne Pool. Those interested in the Duval Oil Corp. discovered this extension and have completed a few wells. It is understood arrangements are being made for pipe line connection and there will be some development of production.

Balcones Fault Zone

The Edwards lime has proven such a prolific producer in the three fields in Caldwell and Guadalupe Counties producing from that formation that the next tier of counties toward the Gulf are sure to come in for some Edwards lime wildcatting as soon as conditions improve. Almost no tests have been drilled to the Edwards in that strip of counties which includes Wilson, northern Atascosa, Gonzales and Fayette.

Two new tests have started in Milam County that will go to the Edwards. H. W. Elliott has spudded in No. 1 J. P. Marek in the B. Wickson Survey, 767 feet from the north line and 500 feet from the west line of the tract, and Nowlin and others have spudded in their No. 1 R. M. Beard in the J. F. Guthrie Survey 4 miles south of Thorndale.

Across to the west in Williamson County where Anderson and others last year on the Forewood farm a little north of Thrall had a showing that many thought for a time would make a well, the Citizens Oil Development Co. drilled No. 1 Forewood to 932 feet and has a slight show of oil and have its No. 2 Forewood down to 1,004 feet with oil showing from 995 to 1,004 feet. No. 1 has been abandoned and they are getting ready to test No. 2, which topped the Austin chalk at 770 feet.

A little west of the center of the east line of Travis County, Fritz Fuchs' No. 1 L. Ballerstedt in the Amos Alexander Survey is down 1,050 feet, having made that depth in about a week. Operators along the Travis-Bastrop County line are looking mainly for serpentine plugs. Fritz Fuchs also has location for No. 1 Smith in the D. Kimbor Survey, a few miles north of his Ballerstedt test in the Amos Alexander Survey. E. R. Marts and others drilled some tests around that part of the county last year.

In the extreme northern point of Milam County, Wilson-Broach of Beaumont are down 2,630 feet and drilling in Georgetown in No. 1 E. L. White in the Samuel Frost Survey and in about the center of the survey. It is to be an Edwards lime test and topped the Austin chalk at 2,069 feet with 172 feet of chalk. The test that Elliott is starting in the Wickson Survey is about 5 miles southeast of the Wilson-Broach test.

Along with the rest of the increase in activity in the northern section of the Balcones fault zone most of the tests in Milam County which were inactive are now doing something. Two are in the extreme eastern part of the county. Dil-Tex Oil Corp.'s No. 1 Dilbeck in the Francisco Rodriguez Survey in the extreme eastern point of the county is down 2,500 feet 3 miles southeast of Cause, and a couple of miles north of Branchville the Red Bank Oil Co.'s No. 1 J. A. Foster in the A. G. Perry Survey topped the Pecan Gap at 3,217 feet and is now down 4,153 feet and drilling.

From the northern part of Caldwell County south and west the Balcones fault is nearly inactive except for the Ralph R. Lewis test in eastern Caldwell County, which will go to the Edwards lime. Mills and others' No. 1 McMahon, which has been standing at 2,505 feet, plugged back to 2,150 feet and shot with 100 quarts of nitro but without helping. The top of the chalk was at 2,115 feet. Camp

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SOUTHWEST TEXAS PROVEN AREAS

COOKSEY POOL—BEXAR COUNTY

Company, farm and location—	Remarks:
Witherspoon Oil Co.'s No. 1 Knapick, 412 ft. W of CEL in J. W. Riall Sur.	Rigging up.
Witherspoon Oil Co.'s No. 1 Anoil, 412 ft. W of CEL of tract in J. W. Riall Sur.	Rigging up.

DOBROWOLSKI POOL—BEXAR COUNTY

W. S. Rogers et al's No. 1 L. Donnop, Juan Montes Sur.	T. D. 612 ft.; shut down.

BRUNER POOL—CALDWELL COUNTY

Joe Bruner's No. 1 Malone, A. Floyd Sur.	T. D. 2,572 ft.; set csg.; standing.

DARST CREEK FIELD—GUADALUPE COUNTY

Magnolia Pet. Co.'s No. 8 M. T. Klein, 300 ft. SE of No. 1	T. D. 1,600 ft.; drlg.

CHAPMAN POOL—WILLIAMSON COUNTY

Chapman et al's No. 2 Lawrence, S. Miller Sur.	T. D. 1,916 ft.; set 6⅝-in. csg.; waiting on cement.
Vitex Oil Co.'s No. 8 Kilgore, Simon Miller Sur.	T. D. 1,735 ft.; waiting on cement.
Westbrook Oil Corp.'s No. 8-A Lawrence, 150 ft. from S and E lines of tract in S. Miller Sur.	Location.

PETTUS POOL—BEE COUNTY

J. L. Mauldin's No. 1 fee, 1,300 ft. N of S line, 150 ft. E of Medio Creek, Kerr Sur.	T. D. 3,930 ft.; standing.
Geo. N. Moore et al's No. 2 Freeland in John Pace Sur., 1,000 ft. from S line, 600 ft. from E line of survey	T. D. 4,294 ft.; standing.
United Prod. Co.'s No. 39 Ray, 1,130 ft. to SE line, 2,396 ft. to SW line of T. Hanson Sur.	T. D. 2,558 ft.; drlg.
T. R. Slick, estate's No. 1 Ray in Kerr Sur., 330 ft. E of most easterly W line, 150 ft. N of S line of survey	Location.

CARTWRIGHT POOL—LIVE OAK COUNTY

Houston Oil Co.'s No. 14 Cartwright, 1,000 ft. W of No. 23 Cartwright	T. D. 4,525 ft.; drlg.
Houston Oil Co.'s No. 23 Cartwright, 691 ft. N, 30 degrees E of No. 11	T. D. 2,565 ft.; pumping 100 bbls. oil.

CHITTIM POOL—MAVERICK COUNTY

Texas Gas Utilities' No. 8 Chittim, 24 ft. S of No. 7 Chittim	T. D. 4,635 ft.; drlg.

SAXET FIELD—NUECES COUNTY

Gulf Coast Oil Co.'s No. 1 Maggie Harrall, 330 ft. from S and W lines of Blk. 32, Sec. 311	T. D. 4,820 ft.; drlg.
Houston Oil Co.'s No. 1 Lawrence	T. D. 4,081 ft.; set csg.
Houston Oil Co.'s No. 2 Rand Morgan	T. D. 4,092 ft.; drilled plug.

LAREDO DISTRICT

KOHLER POOL—DUVAL COUNTY

Humble Oil & Refining Co.'s No. 94 Kohler, 2,294 ft. from S line, 165 ft. from W line of Sur. 184	T. D. 7,090 ft.; drlg.

COLE POOL—WEBB COUNTY

F. P. Zoch and Trinity Drilling No. 1 Cuellar, 1,300 ft. from NW and SW lines of Share No. 2, W. of Bruni	T. D. 2,065 ft.; drlg.

CAROLINA-TEXAS POOL—WEBB COUNTY

George S. Marshall's No. 1 Benavides, 660 ft. from S line, 150 ft. from E line of Sur. 683	Location.

KILLAM-CUELLAR POOL—ZAPATA COUNTY

O. W. Killam's No. 40-B B. F. Cuellar, 325 ft. E of No. 41.	T. D. 1,425 ft.; drlg.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

ATASCOSA COUNTY

Company, farm and location—	Remarks—
Tom Draper's No. 1 Truebiood, 250 ft. from N line, 1,440 ft. from W line of tract, John Neill Sur.	T. D. 650 ft.; shut down.
Glen Mathis, trustee's No. 1 Martin, 150 ft. to NE line, 2,640 ft. to SE line of tract in Jose Antonio Navarro Sur.	T. D. 2,012 ft.; fishing.

BLANCO COUNTY

Hardy-Sitton's No. 1 McMillan	T. D. 600 ft.; fishing.
Liles-Adams et al's No. 1 Stanford, 150 ft. to S line, 1,420 ft. to E line of James Stanford's No. 155	T. D. 1,040 ft.; drlg.
McCleary et al's No. 1 Schenling, 900 ft. to SE line, 600 ft. to S line of J. A. Rouse No. 118 Sur., 4 miles SW from Blanco City	T. D. 574 ft.; shut down.
C. Rosenfield's No. 1 Hohenberger, 800 ft. to W line, 1,260 ft. to N line, Sur. No. 94	T. D. 712 ft.; shut down.

BASTROP COUNTY

W. A. Allen's No. 1 Birmingham, James Stewart Sur.	T. D. 335 ft.; shut down.
W. H. Champion's No. 1 Ray, center of 95-ac. tract in Thomas Christian Sur.	Duplication, dropped.
Smith & Barnes' No. 1 Marberger, 50 ft. W line, 1,360 ft. S line of tract in King & Millett Sur.	T. D. 515 ft.; drlg.
Texas Dev. Co.'s No. 1 C. H. Ray, 800 ft. from W line and 400 ft. from S line of farm in Thos. Christian Sur.	Derrick.

BELL COUNTY

Mildon Oil Co.'s No. 1 J. K. Edds, Maxiano Moreno Sur.	T. D. 906 ft.; drlg.
Fields & Lange's No. 1 C. S. White, 150 ft. from S line, 300 ft. to E line of farm in Nancy Roberts Sur.	T. D. 297 ft.; drlg.
Hartman Drilling Co.'s No. 1 E. L. Deaver, 600 ft. to N and 300 ft. to E line of farm, in Nancy Roberts Sur.	T. D. 482 ft.; drlg.
C. O. Alford's No. 1 A. L. Keifer, 150 ft. from S and W lines of tract in Woodford Sur.	Location.
Vilas Oil Co.'s No. 1 B. F. Whittington, 9 miles E of Holland	T. D. 1,298 ft.; shut down.

BROOKS COUNTY

Ike Howeth's No. 1 Singer, 400 ft. E of Humble's No. 1 Singer	T. D. 2,230 ft.; standing.

BEE COUNTY

Alexander et al's No. 1 McFall, 3 miles S Skidmore	T. D. 1,510 ft.; standing.
Mauldin et al's No. 1 Kimball, 300 ft. S Grayburg's No. 1-A Kimball, S. Winship Sur.	T. D. 3,544 ft.; fishing.

BEXAR COUNTY

Schneider, Rees et al's No. 2 Claussen, 13 miles NE of San Antonio	T. D. 850 ft.; drlg.

CALDWELL COUNTY

Ralph R. Lewis' No. 1 Keith McGee, 600 ft. from E and S lines of tract in J. Pinchback Sur.	Spudded in.
Mills et al's No. 1 McMahon, 275 ft. SW line, 75 ft. SE line of tract, J. Pinchback Sur.	T. D. 2,502 ft.; plugged back to 2,150 ft. and shot with 100 qts. without benefiting.

COMAL COUNTY

Caldwell & Lanier's No. 1 T. J. Byler, 175 varas from W line, 370 varas from N line of 320-ac. tract in the H.E.&W.T.. No. 5,894 Sur.	T. D. 722 ft.; trying to set csg. on bottom.

(Continued on Page 84)

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Shot Packed Pump

Precision Machined

LOWER LIFTING COST

No plunger freezing by floating sand.

No temperature or loadstone effects.

No cups to wear out or replace.

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Pour the shot down the TUBING when production weakens and you have recupped the plunger.

A trial will convince you that its operation and principle is right, and the secret of its success is the proper leading-up of the gray iron barrel and plunger.

Made for 2, 2½ and 3-inch tubing; upset or regular. The barrels are called and classified as 6, 8 and 10-foot barrels. When ordering, specify the tubing as upset or regular, also the thread on same, likewise the rod on plunger, whether A.P.I. or old standard pin.

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There can be no excessive oil remain above the packer, because its construction permits the oil to return thru valve "A". This principle takes the weight off of the cup above, allowing the cup on the bottom to expand and adhere to the casing by gas pressure underneath.

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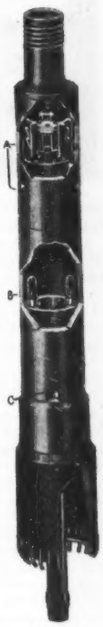

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American Steel Tool Boxes
American Forged Steel Wall Hooks
American Rock Bit Breakout Blocks
American Paraffin Bits
American Forged Steel Drill Collars
American Female Die Nipples
American Releasing and Circulating Spears

American Tapered Taps
American Forged Steel Subs
American Rotary Shoes
American Cone Fishing Baskets
American Steam Lubricators
American Side Tracking Mills
American Combination Reverse and Throttle Levers
American Steel Engine Foundations
American Automatic Cat Head
American Rock Bit Vises
American Rotary Milling Tools
American Myracle Sucker Rod Sockets
American Surface Bit Blades for Rock Bits

American Drill Pipe Float Joints
American Casing Suspender and Blowout Preventer
American Lead Plug
American Rock Bit Cone Fishing Sockets
American Steel Whipstocks
American Inside Pipe Cutter for Drill Pipe or Casing
American Adjustable Steel Rig Braces
American Fish Tail Bits
American Pipe Rackers
American Boltless Hose Clamp
American Shot Packed Barrel
American Cactizona Water Treatment

AMERICAN PRODUCTS SOLD THROUGH LEADING SUPPLY STORES

Prolific Sand Found at Barbers Hill

Good Salt Dome Well at Lake Barre. Leesville Well Increases When Deepened. Third Gas Sand in Victoria Test

By Nell Williams
Staff Correspondent, Gulf Coast Fields

HOUSTON, Tex., Aug. 10.—The Barbers Hill Dome, around which new productive possibilities almost constantly are being revealed, again was in the limelight the past week when The Texas Company proved up a prolific horizon above the "Big Lime" on the east flank of the salt. Although this sand has been found in a few wells on other sides of the dome all production to date on the long east side has been in sands below the lime.

The new horizon was topped in this well, The Texas Company's No. 6 Wilburn, at 4,457 feet and was drilled into to a total depth of 4,509 feet. The other sand, below the lime, on the east has been from 5,000 to 5,400 feet, depending on the distance out from the dome. The "Big Lime," which has been used as a marker in previous drilling around Barbers Hill, has been topped around 4,700 feet on the east flank at its highest and below that a shale bed of between 100 and 150 feet must be penetrated before the deep pay horizon is topped.

Like the deeper sands below the lime, the horizon above the lime is in the Oligocene but probably is at the top near the contact with the Miocene. The productive portion lies well up under the salt overhang and if the sand has been found in other wells it has been too far out to show anything but water. The Texas Company's well is the farthest inside well on the east flank but at that is believed to be an outside edge well for that sand. This is indicated in the fact that it is only 250 feet west (inside toward the dome) from the same company's No. 4 Wilburn which passed the sand and was completed in the horizon under the Big Lime at 5,188 feet. If it is an outside edge well for that sand it opens important new possibilities for development even closer in on the dome. This well, to reach the sand, drilled through salt from 1,512 feet to 2,368 feet. The first 178 feet (1,512-1,690 feet) was broken salt and sedimentary formations.

Unusually Prolific

Where found by wells on other sectors of the dome this shallower sand above the lime has proved unusually prolific. The Texas Company's well flowed 2,321 bbls. in the first 18 hours before entirely cleaning itself but is estimated as good for 3,500 bbls. While cleaning the well was on a three-quarters-inch choke, showing 370 pounds pressure. A trace of b.s. was present but that can be choked back. Fifty feet of 7-inch screen was set in the sand. Gravity of the oil is 24.6° with temperature of the well 98°.

Completion of this well will call for an offset by McAlbert Oil Co., the well being only 50 feet north of the latter's property. The entire east side of the dome is made up of numerous ownerships in small, narrow strips, which may result in the opening of a new "line fight" drilling play in proving up the sand. It was these numerous ownerships which brought about the rapid and close development of the other horizon below the lime following the discovery of that sand in October, 1928.

Lake Barre Well

Another good salt dome well completed the past week was at Lake Barre in the coastal marshes of southern Terrebonne Parish, Louisiana. There The Texas Company's No. 6 State was brought in flowing better than 2,000 bbls. daily on a half-inch choke from sand topped at 3,783 feet. Bottom of the hole was slightly below 3,800 feet. This is the seventh producing well completed on this dome, which has been marked by an unusually successful development program. The dome is one of seven in that parish discovered by the Louisiana Land & Exploration Co. geophysically during 1927 and 1928 and turned to The Texas Company for development. The latter company has been carrying on a steady and consistent drilling program on each of the domes since then which has resulted in the proving of all but one of the seven.

The past week might have been termed a "The Texas Company" week on the Gulf Coast as this company provided virtually all the important developments. In addition to the above two wells, each on a different dome, that company also deepened its No. 2 Louisiana Land & Exploration Co. on its Leesville geophysical dome in LaFourche Parish, to sand at 3,665-89 feet, where one joint of 2½-inch screen was set and the well completed flowing 60 bbls. hourly on a half-inch choke. This well, the discovery well of the field and the only producer, originally was completed February 18 in sand at 3,028-46 feet as a 300-bbl. well. It later, in April, was deepened to sand at 3,598-3,628 feet and completed flowing 60 bbls. hourly. Since, it has produced fairly steadily until recently when it again was deepened to its present level.

Victoria Semiwildcat

It was another test of The Texas Company, No. 3 McFaddin, John M. Rine Survey, southern Victoria County, which also figured in coastal oil reports. This test, a semiwildcat, encountered its third consecutive gas sand at 3,281-3,332 feet. The others were at 3,074-79 and 3,132-38 feet. A good gas well could have been completed in any of these sands, it is believed, but the hole is being taken down in search of possible oil sands. So far only gas has been found in that area. The Texas Company has one other gas well, its No. 2 McFaddin, which is at a total depth of only 2,025 feet. It is over a half mile to the south of the present test. No. 2 was completed last February. It also made considerable fresh water when it blew out with an uncased hole but the well was successfully killed and the hole cased under pressure and the water shut off. The well has been standing shut in until recently when it was opened and turned into a trunk line, which was only a few miles from the well.

These wells are about 4 miles to the southwest of United Gas Co.'s three gas wells in a 3,700-foot horizon, which in turn are about 3½ miles to the south of a high pressure dry gas well recently completed by the T. B. Slick estate. All are on the McFaddin ranch. Although only dry gas has been found so far, the area is looked upon generally as one of the most promising for possible oil development. The structure apparently is of large extent with numerous sand lenses and bears close resemblance to the Refugio district, a short distance down the coast in an adjoining county. For a long period only dry gas was encountered at Refugio.

Refugio District

Southwest of The Texas Company's gas area in southern Victoria County, Humble Oil & Refining Co. over the line in Refugio County started drilling in its new wildcat, No. 1 O'Connor, John Keating Survey. At the close of the week it had cemented 20-inch surface casing at 106 feet.

In the Refugio district, T. P. Morgan's No. 1 Lambert, a wildcat located 2,000 feet north of the Lambert Pool and about 2½ miles northeast of the main Refugio field, proved somewhat of a disappointment when it was abandoned as dry at 6,532 feet. This test was expected to prove an important link between the small Lambert Pool, in which three 5,800-5,900-foot wells have been completed, and a wildcat producer, United Production Corp.'s No. 1-A Fox, 7,000 feet north of the Lambert wells, and recently completed in the same horizon at 5,880-86 feet. This, however, does not necessarily condemn all territory between those wells as all Refugio development has been more or less spotted. United Production Corp.'s No. 1-B Fox, approximately 1,350 feet to the south of No. 1-A, the wildcat producer, late in the week was preparing to drill plug to test the sand at 5,865-72 feet. It is being watched with considerable interest, especially in view of the failure of Morgan's Lambert test.

Vermillion Prospect.

That another geophysical prospect has been proved as a dome seemed fairly certain, although not definite, with Pure Oil Co.'s No. 1 Alliance Trust Co. at Gueydan, Vermillion Parish, Louisiana, in a hard, sandy lime and calcite. As yet the tell-tale cap rock and salt has not been topped, but calcite usually is associated with cap and the true cap is expected to be picked up soon. The test topped the formation around 6,080 feet and now is in it at a total depth of 6,185 feet, but drilling has been delayed by a fishing job. Pure Oil Co. offices, however, late in the week still were not willing to venture a positive statement that the dome had been proved. This is the second test drilled, the first being abandoned at 6,594 feet. Location was made two weeks ago for the third test.

Lost Dome Wildcat.

Location has been made by Pure Oil Co. for another deep wildcat at its Lost Lake Dome in northern Chambers County. This test, No. 6 Lake, is located 2,381 feet west and 289 feet south of No. 5 in Lost Lake. This is approximately 7,500 feet to the west of production on top of the dome. No. 5 previously was the farthest west test drilled, it being abandoned last February in salt and anhydrite at 7,471 feet. That test topped calcite cap at 5,160 feet and the anhydrite at 5,185 feet and the first salt at 6,280 feet. There has been no drilling at Lost Lake since June when Pure's No. 13 Mayes was abandoned in cap at 5,560 feet.

Cullen & West and Gulf Production Co. have started drilling in their fifth test in their new Lockwood (Thompson) Field, eastern Fort Bend County. This will be No. 2-A Lockwood & Sharp, located 600 feet north of No. 1, J. Rabb Survey. This will give the field two rigs, only one rig having been run in the area before this. No. 1-B Lockwood & Sharp, the other test drilling, is down below 2,300 feet. Three wells have been completed in the area.

High Island Test

Yount Lee Oil Co. also has started up another test on the northwest side of its High Island Dome, Galveston County, following the completion of its No. 21 Cade the previous week. No. 22 Cade, the test, is located 125 feet south of No. 21, N. Fitzsimmons Survey.

Vacuum Oil Co. late in the week was drilling plug in its No. 1 Waite, Iowa geophysical prospect, Calcasieu Parish, Louisiana. It is to test sand showing oil at 6,961-79 feet. One joint of 7-inch screen is in the hole having been run in on the bottom of the 7-inch casing.

Deep Test Oil Co. has abandoned its No. 1 Kramer, a deep test on the shallow Brenham Dome, Washington County. The test was dry at 4,100 feet. Rio Bravo Oil Co. has junked its No. 2 H. E. & W. T., test flank of the Humble dome, after several unsuccessful sidetracking attempts. Total depth of the hole was 4,742 feet.

GULF COAST FIELDS AND WILDCATS

Week Ended August 5

All Rotary

BARBERS HILL—CHAMBERS COUNTY

Humphreys Corp.'s No. 6 E. R. Winfree, W. D. Smith Sur., 50 ft. from N line and 50 ft. from W line of tract — Drlg. rock 4,858 ft.

Humphreys Corp.'s No. 1 Ebanspacker, Henry Griffith League, 700 ft. from the N line and 70.6 ft. from the E and W lines of the tract — Drlg. surface formation 186 ft.

Sinclair Oil & Gas Co.'s No. 3 Smith, W. D. Smith Sur., 50 ft. out of S cor. of tract — Drlg. lime rock 4,949 ft.

Sun Oil Co.'s No. 2 Smith, W. D. Smith Sur., 75 ft. from W line, 50 ft. from N line of tract — Total depth 5,408 ft.; milling on stuck pipe.

Sun Oil Co.'s No. 3 Smith, W. D. Smith Sur., 50 ft. from S line, east offset Yount Lee Oil Co.'s No. 2 Winfree — Total depth 5,318 ft.; plugged to 5,263 ft.; set 5 jts. 3½-in. (O.D.) inside screen; swabbing.

Sun Oil Co.'s No. 1 Anna Higgins, Wm. Bloodgood Sur., 230 ft. from E line and 31 ft. from S line 10-acre tract — Drlg. sand and shale 4,468 ft.

Sun Oil Co.'s No. 2 Winfree, W. D. Smith Sur., 50 ft. E of SW line and 150 ft. N of S line of tract — Total depth 3,465 ft.; cmtd. cavity and preparing to resume drlg.

The Texas Company's No. 3 Winfree, west flank, W. D. Smith Sur., 264 ft. N, 50 ft. W at right angles out of SE cor. of lease — Total depth 5,622 ft.; sidetracking in hard sand 5,509 ft.

The Texas Company's No. 6 Wilburn, Henry Griffith League, 250 ft. W of No. 4 and 50 ft. from S line of lease — Total depth 4,509 ft.; set 50 ft. of 7-in. screen; comp. flowing 2,321 bbls., 6% b.s. and water, in 18 hrs.; pressure 370 lbs., ¾-in. choke, 24.6 gravity, temp. 98°.

HUMBLE—HARRIS COUNTY

Rio Bravo Oil Co.'s No. 2 H.E.&W.T., Adams Sur., 250 ft. N along railroad tract from No. 1 and 25 ft. W from center of said tract — Total depth 4,742 ft.; sidetracking in sticky shale 2,858 ft.

The Texas Company's No. 25 House (D.D.), M. Owen Sur. — Drlg. shale and lime 4,978 ft.

PORT NECHES—ORANGE COUNTY

The Texas Company's No. 1 Polk-Kuhn-Glass, 250 ft. E and 1,545 ft. S of SW cor. Marshall Beauchamp Sur., in the T. J. Notgrass Sur. — Rigging up.

The Texas Company's No. 3 Kuhn, 587 ft. S and 150 ft. W of NE cor. of the Mary E. Hall Sur. No. 2 — Location.

MARKHAM—MATAGORDA COUNTY

Ike Laughlin et al's No. 1 W. H. Gray, 400 ft. from S line, 150 ft. E line, Blk. 3, Wm. Hadden Sur. — Drlg. gumbo 2,516 ft.

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New Operations on Greasewood Dome

Old Test in Weld County, Colorado, Resumes. Hobbs, N. Mex., Wires Support for Murray. Good Well in Osage Field, Wyoming

By Tolbert R. Ingram
Staff Correspondent, Rocky Mountain Area

DENVER, Colo., Aug. 10.—In the Greasewood area, Weld County, Colorado, the Continental Oil Co. has its two rotary operations under way. One is located in the section north of the discovery well, the other south of the discovery well but in the same section. No. 1 Briggs is located in the C SE SW of Section 13-6n-61w, and is spudding at 200 feet. No. 1 Gadbois is in C SE SW of Section 24-6n-61w, and is rigged up ready to spud. The discovery well, No. 1 Patterson, NE SE NW of Section 24-6n-61w, was a completion at 6,647 feet. Between the Continental Oil Co.'s No. 1 Briggs and the discovery well, the Reiter-Foster Oil Corp.'s No. 1 Ida Johnson, C NE NW of Section 24-6n-61w, is drilling at 6,460 feet and will standardize at 6,640 feet before drilling in. This concern is building rig for its No. 1 Johnson-Juhl, C SE of Section 14-6n-61w.

An operation in Weld County that has been idle for several years is resuming. It is known as Retter Oil Co.'s No. 1 Smith, C E half of Section 14-1n-66w, and is a few miles east of the town of Fort Lupton, Colo. The well was drilled to a total depth of 1,171 feet before it was shut down and at that depth was in a sand logged at 1,100 feet. The 12½-inch casing which was landed on bottom is being pulled. It will be rerun and set and cemented at 1,100 feet.

Morgan County

Indian Territory Illuminating Oil Co.'s No. 1 State, C NE NE, Section 16-1n-57, Fort Morgan anticline, has been making rapid progress since changing over to rotary at 4,090 feet and was drilling at 4,625 feet on August 1. Badger Creek Oil & Gas Co.'s No. 1 Kent, SW cor., Section 2-2n-57, Badger Creek Dome, which recently resumed drilling under a contract with J. T. Juhan, is making hole at 1,000 feet with cable tools.

Arapahoe County

MacDeb Drilling Co.'s No. 1 Fitzsimmons, NE, Section 7-4s-66, near Aurora, has run 4¾-inch to 7 feet off bottom at a total depth of 5,835 feet and is drilling ahead at 5,837 feet.

Adams County

Nellie M. Slatt's No. 1 Hills, SE cor., Section 27-3s-64, Watkins district, was reported drilling at 3,737 feet, having made only a few feet of new hole the past week.

Larimer County

Raddatz Corp.'s No. 1 State, SW cor. NW, Section 16-4n-69, Berthoud Dome, is drilling at 2,200 feet in blue shale.

Lincoln County

Eastern Colorado Oil Co.'s No. 1 State, SE cor. NW, Section 36-14s-57, Hugo district, had a show of wet gas at 3,415 feet and is drilling ahead slowly after landing pipe at 3,390 feet. The well probably is in the top of the objective Muddy sand.

Park County

South Park Oil Co.'s No. 1 Milligan, NE SE, Section 13-8s-76, Jefferson district, is drilling at 2,175 feet in gray sand. On the Muleshoe structure, South Park Oil & Gas Co.'s No. 1 Esche, SW NE, Section 5-9s-76w, is drilling at 2,370 feet, after landing a string of 8¼-inch casing at 2,369 feet.

Rio Blanco County

Magnolia Petroleum Co.'s No. 1 Maddock, C NW SE, Section 9-2s-96, Piceance Creek, is drilling below 700 feet. The California Co.'s No. 1 California-Raven, NW SE, Section 30-2n-102, Rangely Dome, is drilling at 1,540 feet in the Mancos shale. The Dakota is expected between 2,950 and 3,000 feet. Some of the former tests drilled on this structure had heavy gas pressure in that horizon.

NEW MEXICO

Lea County

Because there has been no change in pipe line connection or nominations in the Hobbs Pool, Umpire Staley announced that proration schedule No. 26, which limited production to 36,090 bbls. daily and which was used during the period July 16 to 31, will be in effect for the first 15 days of August. The umpire's production statement as of August 1, 1931, records a gross production for the field for the month of July of 1,114,700 bbls., a daily average of 35,959 bbls.

The recent advance in the price of Hobbs crude from 10 cents to 25 cents a barrel has failed to provide any stimulation to drilling operations. The new price of 25 cents a barrel is said to have caused a wave of enthusiasm at Hobbs and 109 business men, oil men and oil field workers sent Governor Murray the following telegram regarding his oil program:

"We, the undersigned business men and citizens of Hobbs, N. M., wish to commend you in your efforts to secure a reasonable price for oil, thereby bringing prosperity to the laboring men and the independent oil producers. Stay in there and pitch."

Drilling in Lea County was of a routine nature. Only two wells are active in the county. Western Drilling Co.'s No. 1 State, SE NE NE of Section 16-20s-32e, is drilling below 3,325 feet. Conrad & Culbertson have recemented casing at 3,260 feet in their No. 1 State, C NE of Section 22-18s-24e.

Eddy County

Flynn, Welch & Yates are drilling at 1,000 feet in their No. 60 State, SW SW SW of Section 5-19s-28e, in the Artesia Field. R. D. Compton's No. 4 Brainerd, C N half SE SE of Section 5-18s-27e, in the Artesia district, has set pipe at 500 feet and is drilling ahead.

Chaves County

There are no active operations in Chaves County at this time but a contract has been let for a 5,000-foot test to be drilled in Section 14-7s-28e, by the Burton Spencer Oil Co. According to Mr. Ware, field manager for the company, a structure favorable for drilling has been located by core drilling. The spudding date is set as October 1, 1931.

Luna County

Angelus Oil & Mining Co.'s No. 3 State, C NW SE of Section 10-21-10w, near Deming, is drilling at 6,137 feet.

San Juan County

Continental Oil Co.'s No. 24 Rattlesnake, SW SW NW of Section 1-29n-19w, in the Rattlesnake Field, a Pennsylvania formation test, has reached 4,723 feet, which is within 7 feet of the bottom of the hole before the fishing and sidetracking work stopped drilling operations. The Ortego interests operating on Westwater structure in No. 2 Childers well, NW NW of Section 24-31n-16w, is cleaning out below 2,000 feet. Total depth is 2,490 feet and after standing idle for a long time the cleaning out process is slow. Kutz Canyon Oil Co.'s No. 1 Day, SW SW, Section 20-28n-10w, is temporarily shut down at 3,420 feet for a new drilling line.

MONTANA

Toole County

Askalta Oil Co.'s No. 1 Farbo, SE cor. NE, Section 2-37-4w, in the Border Field, made 68 bbls. natural the first hour after drilling the Cosmos sand at 2,505-38 feet. It was drilled to a total depth of 2,534 feet and was then plugged back to 2,532 feet to shut off bottom water. Initial production was 360 bbls. It is an offset on the north to the Iowa company's No. 1 Cosmos, which started most of the development in the Border Field. The well is located upon a 30-acre tract taken over last May by the Askalta company from the Mid-Continent Oil & Refining Co. The only other active operation in this pool is Oil Drillers, Ltd.'s No. 1 Farbo, NE SE SE, Section 3-37-4w, which is drilling at 2,470 feet after landing and cementing the 6¼-inch at 2,440 feet.

Carbon County

Ohio Oil Co.'s No. 1 Montana Industrial, SE SW NE, Section 11-7s-21, Dry Creek Field, an offset on the north to the discovery well in the Lakota and the second well on the structure to reach that horizon, is being tested for gas in the Dakota after plugging back from the top of the Lakota at 5,581 feet to 5,439 feet. Same company's No. 1 Souders, C SW SE, Section 2-7-21, half a mile to the north, is testing gas production in the second Frontier after plugging back from 4,409 feet to 4,003 feet. It will be completed as a gas well. Ohio's No. 1 Chapman, C SW SW, Section 2-7-21, is cleaning out at 840 feet. Carbon Oil & Gas Co.'s No. 1 Armstrong, SW cor. NW, Section 7-7-22, is drilling at 4,070 feet in shale.

Glacier County

In the Cut Bank Field, L. B. O'Neil has a near completion in his No. 1 Hughes, C NW SE of Section 3-35n-5w. This well developed 4,500,000 feet of gas in the Sunburst sand at 2,680 feet and after casing it off with 6¼-inch, is drilling ahead. Status of other operations of O'Neil, as trustee for the Montana Power Co., is as follows: No. 1 O. Berger, C SE NE of Section 2-35n-5w, is drilling into the sand after cementing 6¼-inch at 2,740 feet. No. 1 Schneider, C NE SE of Section 32-36n-5w, apparently is a failure at 2,965 feet and may be abandoned at that depth. A show of gas was reported below 2,935 feet which is now being tested. No. 1 State, C SW SW of Section 36-36n-5w, is drilling at 2,650 feet. No. 2 Michaels, C S half NE of Section 33-36n-5w, is spudding at 250 feet. No. 1 State, C NE NW of Section 11-35n-5w, is drilling at 525 feet and No. 2 State, C NE SW of Section 33-36n-5w, is drilling at 700 feet.

Fulton Petroleum Co.'s No. 1 Blackfeet, SW NE NE of Section 28-36-12w, Milk River district, cemented cave at 1,685-1,725 feet. At present cement is being drilled out. Total depth is 2,570 feet.

Liberty County

G. G. Howard and others' No. 1 Lange, C SE SW of Section 7-36-6e, Bear's Den area, had 7,000,000 feet of gas per day at 2,006 feet and is drilling in lime at 2,330 feet. It developed an additional 2,000,000 feet of gas in the Ellis-Madison contact at 2,284-2,310 feet. This well extends the field half a mile to the north. Howard's No. 2 Schoonover, C SE NE, Section 13-36-5e, is rigged up ready to spud, and his No. 2 Ritter, C NE SE, Section 12-36-5e, is rigging up. Liberty Gas Co.'s No. 1 McDowell, C SE SW, Section 13-36-5e, cemented 10-inch at 500

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STRONG FLOW OF WET GAS FOUND ON ALBERTA SIDE OF BOUNDARY

By Victor Lauriston
Staff Correspondent, Canadian Fields

CHATHAM Ontario, Aug. 8.—On the Alberta end of the international Reserve Dome structure, east of Coutts, Mayland Southern's No. 1, LSD 13, Section 4-1-9w4, has encountered a strong flow of gas in the Bow Island sand at 1,807 feet. The drill got the sand apparently in the top of a black limestone. The gas flow is estimated between 3,000,000 and 4,000,000 feet, and at last reports the drillers were reaming to the lime preparatory to drilling into the sand. This is the fourth gas flow encountered. A shallow gas flow, estimated 3,000,000 feet, was met at 310 feet, and two smaller shows lower. The Bow Island sand in this test logs about 300 feet higher than in the Bow Island Field, where the Canadian Western Natural Gas Co. years ago developed a large gas production. The drillers state that the flow from Mayland's No. 1 has a pronounced oil odor and is apparently wet gas, though the gas from the Bow Island Field is a distinctly dry gas.

Mayland Southern's No. 1 is about 47 miles east of Coutts and just north of the international boundary. The test was started last spring, being financed by interests associated with Mercury Oils, Ltd., of Calgary and headed by A. H. Mayland, one of the leading Turner Valley operators. The Reserve Dome is in the vicinity of the Pinhorn fold on the northern slope of the Sweetgrass Hills, and though gas has already been struck on the Montana end of the structure, this was the first test undertaken on the Alberta side so far east. Mayland Syndicate has 5,000 acres on the Alberta end of the structure, and Miracle Oils, Ltd., is reported to hold 3,000 acres.

A number of tests have been drilled at various times in the border area between the new field and Coutts, but none so far east. Range Oil & Gas Co.'s No. 1 gasser on the Rogers-Imperial structure is 12 miles west and 6 miles north. Imperial Oil, Ltd., some years ago drilled a gasser, reported good for 10,000,000 feet, on Etzikom Coulee, and another at Dead Horse Coulee. Still farther west, the Grand Trunk Pacific Oil Co. in 1915 put down a test which is reported to have got a show of oil, but was ultimately abandoned. There has been considerable drilling on the Quarantine Reserve close to Coutts, but without success.

Mayland Southern's No. 1 started work in February. A little later W. J. O'Haire and associates secured acreage and located their No. 1 test in SW Section 10-1-9w4, about a mile east of Mayland Southern's No. 1, but no work has been reported on the test. It is reported that this test will start drilling, and that some new work will likely be started by Montana operators immediately south of the boundary, if Mayland Southern's No. 1 gives satisfactory production when drilled into the sand.

On the Rogers-Imperial structure, Range Oil & Gas Co.'s No. 1, LSD 9, Section 29-1-11w4, which last winter delivered gas to the Montana Cities Gas Co., has shut off water intrusion in preparation for further deliveries next winter. Test of the well after the shut-

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California May Vote on Conservation

Sharkey Gas Measure Likely to Go to Referendum in November Election. Improvement in Production Standpoint Seen

By L. P. Stockman
Staff Correspondent, California Fields

LOS ANGELES, Calif., Aug. 8.—The California oil industry, to use a slang expression, got a break this week when opponents of California's new Congressional and Assembly reapportionment laws were advised by Frank C. Jordon, secretary of state, that they needed only 6,000 additional valid signatures to assure a referendum against these measures. This is of paramount importance because it means that the California electorate may have a chance to ballot on the Sharkey oil conservation bill as Governor Rolph recently reiterated that he would call a special election if the necessary 6,000 signatures were secured within the time limit and thus validate the reapportionment referendum. It is quite possible therefore that the governor will call a special election some time during November, 1931, at which time several laws, including the Sharkey oil conservation measure and possibly the tideland drilling bill No. 1957, will be submitted to a vote of the people. In accordance with California law, legislative bills subjected to referendum action are null and void until submitted to the voters at the next succeeding general election. In this case the future status of the Sharkey bill would not have been normally determined until November, 1932.

A considerable diversity of opinion exists among sponsors of this measure as to whether sufficient public support can be secured to assure ratification of the Sharkey bill. A number of well-informed oil men are of the opinion, however that a concerted effort will be made to secure ratification despite the substantial improvement in the production situation during the past few weeks and hesitancy on the part of some to assume an aggressive attitude. It is a little too early to venture an opinion as to the ultimate outcome of the Sharkey bill if submitted to a general vote, although several clubs, labor unions and public officials of a number of cities, towns and municipalities have endorsed the attempt to effect stabilization in the California oil industry. The possibility of success appears good at the present time but there are so many cross currents that it is impossible to foresee the ultimate outcome with any degree of accuracy.

Prohibits Overproduction

The Sharkey conservation measure, otherwise designated as Senate Bill No. 362, was enacted at the last session of the California legislature and subsequently signed by Governor Rolph. It specifically prohibits waste and defines waste as underground waste, surface waste, destruction without beneficial use, careless or improper drilling, crude oil production in excess of current demand and excessive losses from evaporation or leakage due to abnormal storage. This bill contemplates the reduction of crude oil production to actual requirements as "determined upon the basis of past experience, existing conditions and estimated future requirements of crude oil and its refined products for local use and shipments outside of the State." It also provides for liquidation of excessive stocks and creates the machinery necessary for enforcement. The sponsors of this bill are of the opinion that it will place all producers on an equal basis on the assumption that compulsory regulation will be more effective than mutual co-operative curtailment. It is sufficiently flexible to permit the oil and gas commission to vary production according to requirements.

Gas Conservation Law

California will probably be faced with a rather unusual situation during the coming winter resulting from enforcement of the gas conservation law and rigid maintenance of the existing curtailment plan, as recent developments indicate a probable shortage of natural gas available for commercial consumption due to the projected killing of three big Elliott gas zone wells at Kettleman Hills. To make up for any deficit at Kettleman Hills, it is likely the Buttonwillow gas field will be opened by the Milham Exploration Co. This field has been kept closed in for several months because of existing wastage of natural gas in flush oil fields. The Milham has a potential daily production of natural gas at Buttonwillow of approximately 75,000,000 feet but this will be increased soon as preparations have already been started to redrill and deepen No. 1 Paige from the upper to the lower zone at Buttonwillow. Two dry gas zones are known to exist in this field which the Milham discovered and where it has seven wells completed but shut in. Producers at Kettleman Hills can not open up to meet the anticipated winter demand for natural gas without jeopardizing the crude oil curtailment program or violating a court injunction which enjoins operators from producing more than 10,000 feet of natural gas to each barrel of oil. Operators in the Ventura Avenue Field are in somewhat the same predicament due to enforcement of the gas conservation law as the State Supreme Court and several minor courts of competent jurisdiction have held that the primary objective of natural gas is to bring crude oil to the surface and that commercial requirements for heat or power are of secondary importance.

The gas conservation law has been a factor of no little consequence at Kettleman Hills and Ventura Avenue in spite of the fact that most producers have thought this regulatory legislation a dead issue. Approximately 125,000,000 feet of natural gas is being blown to the air in the former field but this will be eliminated when the three wells now producing from the Elliott high-presure gas zone are killed and instead of a surplus there may be a deficit of natural gas to meet the winter requirements of northern and southern California. This does not mean of course that California consumers will not have sufficient natural gas but merely indicates that the Buttonwillow gas field of Kern County or the Dudley Ridge gas field of Kings County may be called upon to make up the shortage. Production of natural gas from Los Angeles Basin fields has been declining for several months with the result that an additional supply is being brought in from Ventura Avenue and San Joaquin Valley Fields. A proposal has been made to the Ventura Fuel Co., Southern California Gas Co. and the Southern Counties Gas Co. that they increase the amount of natural gas being taken from the Ventura Avenue Field as a means of lessening the waste in that field. During the peak months the gas companies handle approximately 140,000,000 feet of natural gas from Ventura Avenue but this is not at all stable. The amount of natural gas transmitted from this field fluctuates so sharply that James Bennett, representing the State of California in its injunction against Ventura Avenue operators to prevent unnecessary waste of natural gas, is endeavoring to formuate a plan whereby the gas companies can regulate the amount of natural gas they require so it will not register undue fluctuations. The State's representative is of the opinion considerable wastage may be eliminated if the public utilities could absorb a larger amount of natural gas from Ventura Avenue and maintain a fixed schedule for an indefinite period of time.

Kill Kettleman Wells

The three wells at Kettleman Hills which are to be killed because of their excessive gas-oil ratio are No. 1-12 P of the Kettleman North Dome Association, producing 75,000,000 feet of gas and 1,700 bbls. of oil per day and the Standard's No. 8-1 P and No. 81-11P flowing 72,350,000 and 78,550,000 feet of gas and 1,775 bbls. and 1,700 bbls. of oil per day respectively. Preparations have already been started to kill the Association's big gas well and the Standard will take its Elliott zone wells off production as soon as control work has been completed by the Association. These three wells are to be killed in conformity with an injunction issued several months ago by Judge S. L. Strother of the Superior Court who ruled that they must be killed because of the excessive gas-oil ratio of each. It is interesting to note that they would not be allowed to remain on production even though a market was available for every foot of natural gas produced as they are producing more than the maximum allowable of 10,000 feet of gas to each barrel of crude brought to the surface.

The preliminary injunction enjoining operators in the Kettleman Hills Field from wasting natural gas was issued by Superior Judge Strother on April 13, 1931, and specifically prohibits: (1) Blowing any gas to the air before removing natural gasoline or afterwards, except 5,000 feet daily tolerance for leakage; (2) Receiving any gas produced in violation of terms of injunction; (3) Keeping on production after May 1, 1931, any well producing more than 10,000 feet of natural gas to a barrel of oil; (4) Completing any well except under control with flow string extending to a point not over 600 feet from water shut-off and with equipment such that well can be killed after five-day flow test or opening any well before providing oil and gas lines, absorption plants and other equipment sufficient to handle production; (5) Producing any well drilled less than 1,000 feet into the Temblor and producing more gas than operator can at the time efficiently and economically utilize. The injunction also provides that (1) Fittings must be replaced, when worn, with fittings which will sustain test pressures of 5,000 pounds and working pressures of 2,500 pounds; (2) Operators convinced that wells cannot be shut in with safety may apply to the court for relief from penalties of contempt; (3) Weekly reports of production, pressures, deliveries of wet gas and gas blown to air before gasoline removed must be made to clerk of the court and duplicate sent to the Coalinga office of the state oil and gas supervisor, beginning May 1, 1931, together with a monthly report showing production of dry gas, quantity used, delivered and blown to air and quantity of gasoline extracted from average day's production; (4) Similar report from absorption plants must be made monthly; (5) Meters must be installed at all wells and natural gasoline plants.

Control Work Proceeding

The Kettleman North Dome Association recently killed its No. 88-2 P, the Milham's discovery well, in the North Dome of Kettleman Hills because of its excessive gas-oil ratio and, while no great difficulty was experienced in bringing it under control, Fred Stone is having considerable trouble in removing the drill pipe from the bottom of the hole. It will be recalled that this well blew in rather unexpectedly in October, 1928, during the course of a fishing job with the result that the drill pipe dropped approximately 1,700 feet and became firmly lodged in the bottom of the hole. The 3,000 feet of 3-inch drill pipe is being removed in sections varying from 20 to 200 feet, depending on just how badly the pipe is twisted. The job of cutting this pipe is extremely difficult as the clearance in the hole is rather small and only a part can be cut out at a time especially at frequent intervals where the drill pipe is badly bent.

Control work on the Kettleman North Dome Association's No. 1-12 P (Continental's No. 1 Elliott) is proceeding slowly due to work being done by the Association on the Milham's discovery well as the same crew and control equipment is being used on both projects. Preliminary work has been started on No.

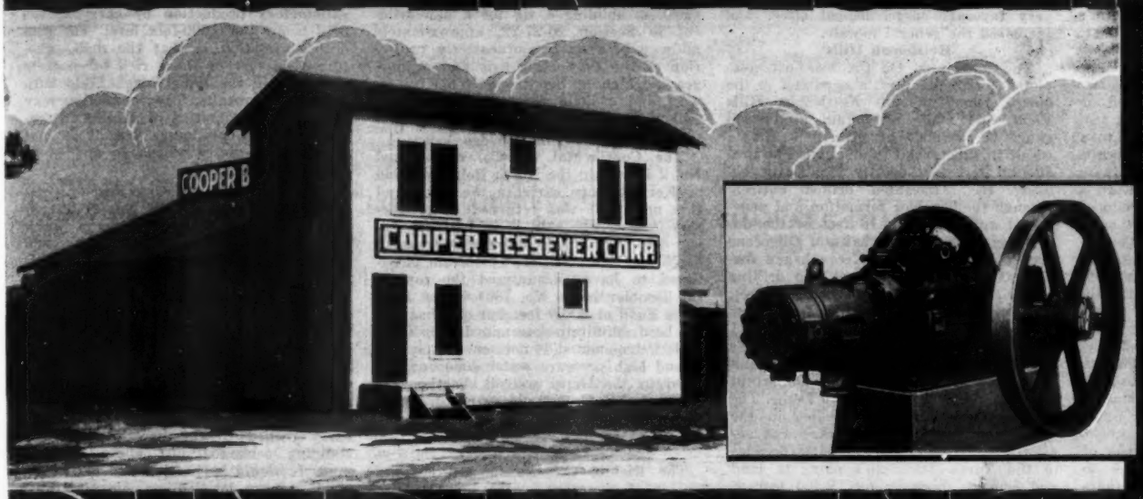
TANKER SHIPMENTS FROM LOS ANGELES TO ATLANTIC AND GULF COAST PORTS

Commodity	Total this week	Daily average	Total last week	Daily average	This year to date	Same time last year
Crude oil	.....	.....	.....	.....	.....	68,690
Fuel oil	.....	.....	.....	.....	.....	71,950
Diesel and gas oil	.....	.....	107,150	15,307	1,094,502	2,294,195
Gasoline	171,917	24,560	.....	.....	8,458,856	11,784,649
Kerosene	.....	.....	.....	.....	157,589	.....
Coastwise—						
Crude oil	640,751	91,536	433,182	61,883	13,120,926	9,087,080
Fuel oil	172,059	24,580	176,876	25,268	7,775,597	10,205,050
Diesel and gas oil	16,486	2,355	26,544	3,792	912,474	1,138,088
Gasoline	126,506	18,072	469,684	67,097	8,294,503	7,455,371
Kerosene	4,438	634	.....	.....	206,242	114,685
Naphtha distillate	.....	.....	.....	.....	4,952	.....
Exports—						
Crude oil	307,596	43,942	149,242	21,720	4,509,482	3,951,765
Fuel oil	369,674	52,811	174,712	24,959	8,618,824	10,901,890
Diesel and gas oil	53,630	7,661	98,882	14,140	2,307,907	2,797,992
Gasoline	79,375	11,325	232,504	31,786	5,464,277	9,740,325
Kerosene	.....	.....	66,510	9,501	1,044,210	2,261,439
Lubricants	.....	.....	.....	.....	36,353	10,082

TANKER SHIPMENTS FROM SAN FRANCISCO TO ATLANTIC, GULF COAST PORTS

Diesel and gas oil	.....	.....	.....	.....	.....	227,648
Gasoline	68,920	9,846	.....	.....	474,389	783,367
Lubricants	5,316	759	.....	.....	27,306	16,776
Coastwise—						
Fuel oil	92,421	13,203	149,310	21,730	2,520,281	2,184,119
Diesel and gas oil	.....	.....	83,047	11,864	278,159	169,165
Gasoline	58,638	8,377	110,863	15,838	2,242,242	2,416,394
Kerosene	4,681	669	24,261	3,466	203,286	145,620
Naphtha distillate	.....	.....	.....	.....	49,780	.....
Exports—						
Crude oil	.....	.....	.....	.....	107,736	3,075
Fuel oil	13,990	1,999	.....	.....	813,293	662,135
Diesel and gas oil	.....	.....	.....	.....	294,708	207,209
Gasoline	70,412	10,059	205,971	29,424	2,695,205	2,520,141
Kerosene	4,216	602	.....	.....	540,188	498,203
Lubricants	.....	.....	.....	.....	.....	18,672
Naphtha distillate	.....	.....	.....	.....	20,100	.....

COOPER-BESSEMER



This engine is the single-cylinder Type G-1 gas engine, rated 25 to 50 B.H.P. Its fine fuel consumption can be reduced still lower — to approximately a 4-cycle level — by adding a Gas-Injection Pump. Oil-fuel heads and fuel injection systems are obtainable separately for quick conversion of Type G-1 gas engines — and are standard equipment on Type G-1 oil engines.

PUMPING ENGINES AND PARTS SERVICE

PICTURED above is the Cooper-Bessemer engine and parts warehouse recently established at Willow Springs, Gregg County, Texas (near Longview).

This central location is an advantage to producers throughout the East Texas area. And the fact that complete stocks of modern pumping engines and parts are always quickly available will encourage users to standardize on this make of engines. One of Cooper-Bessemer's most experienced warehousemen has been placed in charge.

Type GA pumping engines, convertible for oil or gas fuel, are the endurance champions in every field where they are used. A new Bulletin tells about their 2-cycle simplicity and 4-cycle economy. Write for it.

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FOR EAST TEXAS

1-12 P, however, and the christmas tree has already been changed around and other preparatory work started. Extreme precautions are being taken in connection with this work both with respect to the manner of operations and the method used in executing each task. Bronze hammers are used exclusively and no matches or pocket lighters are allowed within a radius of 500 feet of either job due to the extreme fire hazard. The Milham's discovery well was killed without any trouble of any kind in less than two hours after control work was started.

State Production

State production, after dropping to a low of 490,000 bbls. per day, has swung up again during the past week reaching a high of 511,350 bbls. on August 4. It is likely state production will be reduced below the 500,000-bbl.-mark again some time during the coming week as the upswing during the past seven-day period is attributed to the policy of many operators of producing their current monthly allotment during the first two weeks of each month and then shutting down or producing for a limited period during the balance of the month. This is especially noticeable in San Joaquin Valley fields where operators have found it more economical to chalk up their allotment during the first two or three weeks and then go fishing for the balance of the month. Some operators choose to pump during daylight hours and others for longer or shorter periods depending on the productivity of each individual lease. Where water troubles are prevalent, as in the Kern River Field, production activities are maintained more or less active to keep ahead of the water. Playa Del Rey and Santa Fe Springs are the only two fields in the State producing in excess of their allowable production, although a few other districts are temporarily over their daily allotment while operators are making up for underproduction during the early part of the month.

Although state production swung up again over the 500,000-bbl.-mark during the week, there appears to be a very definite improvement from a production standpoint. There is considerably less spot oil at present and crude is getting tighter with each succeeding week. The Oil Producers Sales Agency has been successful in gaining new members during the past few weeks and satisfactory sales contracts have been negotiated for the sale of this additional production to refining companies. If the receivers in equity for California producers can be induced to join the Sales Agency state production will be well in hand and the general price structure strengthened. It is significant to note that both independent and major refiners, with a few exceptions, are endeavoring to establish and maintain stabilized quotations for both crude and refined oils. If this objective is accomplished, and considerable progress has already been made, it will naturally benefit both producers and refiners. Up until recently there has been some question regarding the ability of refiners to prevent another price war later this year but the improvement in the production situation has exerted a very favorable psychological effect and increased the general morale.

Kettleman Hills

The Associated Oil Co. has just completed No. 2 Whepley, a new well in the North Dome of the Kettleman Hills Field, and while no actual production gauge is available at present it should result in substantial production. The production test is especialy significant because the Associated drilled entirely through the Temblor formation and penetrated approximately 16 feet of the underlying Kreyenhagen shales of Oligocene age. The first definite Kreyenhagen fossil was cored at 8,773 feet and drilling operations were concluded at 8,789 feet. This well was carried 1,676 feet below the top of the Temblor logged at 7,111 feet. The North American Consolidated's No. 1 Blauvelt out on the north flank in Section 36-21-17 is another important well being drilled in the North Dome. The importance of this project lies in the fact that the Bentonite marker was encountered at 8,434 feet and also because of the North American's plans to land and cement approximately 8,480 feet of 8⅝-inch casing. If this is accomplished successfully the North American will have established another record as it is believed this string is greatly in excess of any previous record for this size pipe. This is particularly important as the North American Consolidated holds the present world's record for 13⅜-inch casing which it landed in the same well at 6,763 feet in an elapsed time of approximately two hours.

The Petroleum Securities has resumed drilling in No. 1 Burbank, a test in the Middle Dome of Kettleman Hills, following the landing of an 8⅝-inch water string cemented at 7,326 feet. It is the general opinion that the Petroleum Securities has not yet picked up the top of the Temblor, and it is quite likely that considerable coring will be undertaken as the Temblor oil sand should be encountered at any time if this structure is at all comparable with subsurface conditions in the North Dome.

The Associated Oil Co. is working on an unusually interesting test on the Jacalitos anticline in the Kreyenhagen Hills, a prominent topographic high ridge which parallels the Kettleman Hills to the east. The Associated failed to develop commercial production in the Temblor formation in its Jacalitos test and subsequently resumed drilling to test the Tejon which underlies the Temblor and overlies the Cretaceous. The Associated has leased approximately 2,000 acres on this anticline of which 1,200 were acquired on a sublease from the Snowolene and California Central Oil companies. The Standard has a lease on approximately 1,000 acres, the Continental Oil Co., 80 acres and the Union Oil Co. 80 acres of favorably located property which it owns in fee. The Graham & Loftus Oil Corp. is building a rig for a new wildcat in Section 20-27-22, approximately midway between a southeasterly projection of the Lost Hills axis and a topographic high at Semitropic. This test is west and a little north of the Buttonwillow gas field.

Lost Hills-Belridge

The Continental Oil Co. recompleted No. 2 Result in the North Belridge Field of Kern County early in the week and this new well was returned to production flowing 925 bbls. of 39.1 gravity oil per day from the Temblor formation at 5,475 feet. The General Petroleum is believed to have encountered the top of the Temblor in its No. 1301 in the Lost Hills Field at 3,850 feet but this has not yet been definitely determined. The General Petroleum did not encounter the second high pressure water zone encountered in the Getty well in Section 12-26-20. George F. Getty, Inc., has assigned back its test well to the Lincoln Drilling Co.

Long Beach

The Richlin Oil Co. focused the attention of operators on the Los Cerritos section of the Long Beach Field when it recompleted its No. 1 Signal flowing 1,905 bbls of 28.2 gravity oil and 2,400,000 feet of gas per day. This well, originally drilled by the Venago Oil Co., was redrilled and deepened from 7,688 feet to 7,950 feet, and is one of the best completions up in the Los Cerritos section in a long time. The Richlin Oil Co. completed a well in this district before and one or two other companies have obtained satisfactory production by carrying the drill below the 8,000-foot level. The general assumption is that the drill penetrated another of those rich oil pockets prevalent in the Long Beach Field with satisfactory results. The completion may lead to the resumption of drilling in several adjacent producers but it is not likely this activity will have any great effect on field production.

W. E. McCaslin failed to develop commercial production in his No. 17 Transport, a deep test in the Huntington Beach Field of Los Angeles Basin, at 8,365 feet and operations have temporarily suspended. The failure to secure commercial production was not unexpected as this well drilled through a fault zone and is not generally recognized as a true index of the potentiality of the new zone. It is reliably reported that the Superior Oil Co. will sit tight and refrain from making a production test on any of the three wells which this company has already drilled to the new pay or are standing cemented just above the oil sand. It would be particularly unfortunate if a town lot drilling campaign was precipitated at the present time and operators interested in this area appear to

(Continued on Page 88)

IMPORTANT SOUTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status—
Hines Pet., No. 1 Ocean Park, Los Angeles Co.	8- 2-13	6,510	suspended
Taylor Oil Co., No. 1 Culver, Los Angeles Co.	12- 2-15	6,228	suspended
Mesmer City Corp., No. 1 Mesmer, Los Angeles Co.	24- 2-16	6,701	gr. sd. drilling
Cal. Oilfields Corp., No. 1 Hermosa, Los Angeles Co.	31- 3-14	2,560	suspended
Carniel Oil Corp., No. 1 Hermosa, Los Angeles Co.	31- 3-14	3,114	suspended
McMahon & McDonald, No. 1 Watts, Los Angeles Co.	12- 3-14	4,665	suspended
Thorpe Pet. Co., No. 1 Hawthorne, Los Angeles Co.	19- 3-14	3,840	suspended
Staple Oil Co., No. 1 Manhattan, Los Angeles Co.	24- 3-15	2,700	suspended
Pacific Shore Oil Co., No. 1 Lawndale, Los Angeles Co.	20- 3-14	rig	rigged up
York & Smullin, No. 1 Watson, Los Angeles Co.	29- 4-13	2,790	suspended
Wilmington Consd., No. 1 Watson, Los Angeles Co.	17- 4-13	1,012	suspended
Pedro Pet. Corp., No. 1 San Pedro, Los Angeles Co.	14- 5-14	mtl.	building rig
Brubaker, W. O., No. 1 Van Nuys, Los Angeles Co.	11- 2-15	2,700	suspended
Rucker & Creul, No. 2 Puente, Los Angeles Co.	27- 2-10	2,300	suspended
D. & B. Oil Co., No. 1 Puente, Los Angeles Co.	3- 2-10	4,620	suspended
El Dorado Oil Co., No. 1 Puente, Los Angeles Co.	30- 2- 9	1,790	br. sh. drilling
Marcel Pet., No. 1 Puente, Los Angeles Co.	31- 2- 8	3,100	suspended
Cudahy Oil Co., No. 1 Bell, Los Angeles Co.	30- 2-12	1,370	suspended
Blinn & Gray, No. 1 Montebello, Los Angeles Co.	6- 2-11	4,344	cleaning out
Weist Oil Co., No. 1 Montebello, Los Angeles Co.	34- 1-11	4,842	suspended
Yellowstone Oil Co., No. 1 Alhambra, Los Angeles Co.	24- 1-13	3,919	redrilling
Yellowstone Oil Co., No. 2 Alhambra, Los Angeles Co.	19- 1-12	2,015	plug 1,635
Rucker, L. W., No. 1 Calabasas, Los Angeles Co.	26- 1-17	753	redrilling
Caballero est., No. 1 Calabasas, Los Angeles Co.	23- 1-16	1,052	hd. sd. drilling
Olympic Corp., No. 1 Calabasas, Los Angeles Co.	18- 1-17	5,960	suspended
West Coast Waste Oil, No. 1 Van Nuys, Los Angeles Co.	14- 1-16	rig	suspended
Standard, No. 1 Newport, Orange Co.	26- 6-10	5,561	cemented
Mesa Pet., No. 1 Newport, Orange Co.	21- 6-10	4,919	resume work
Gieck Oil Co., No. 1 Sunset Beach, Orange Co.	20- 5-11	6,000	suspended
Beck, Alfred, No. 1 Corona, Riverside Co.	8- 4- 6	1,110	suspended
Alberta Oil Co., No. 1 Elsinore, Riverside Co.	35- 2- 2	3,425	resume work
Duncan, N. L., No. 1 Sagebrush, Riverside Co.	8- 4- 6	1,150	sd. sh. drilling
Colan Dev. Co., No. 1 Redlands, San Bernardino Co.	35- 1- 2	2,392	redrilling
Mason Oil Co., No. 1 Salton Sea, Imperial Co.	1-17-15	490	sd. sh. drilling
Borderland Oil Co., No. 1 Encinitas, San Diego Co.	12-13- 4	2,519	suspended
Borderland Oil Co., No. 1 Point Loma, San Diego Co.	30-16- 5	5,130	recemented
South Bay Oil Co., No. 1 Border, San Diego Co.	31-18- 2	1,315	sd. sh. drilling
Itasca Pet. Co., No. 1 Mesa, San Diego Co.	33-18- 1	1,500	sd. sh. drilling
Carr, O. K., No. 1 Capistrano, San Diego Co.	13- 8- 8	5,250	suspended

IMPORTANT NORTHERN CALIFORNIA WILDCATS

Company, well and location—	S.T.R.	Depth	Status—
Western Gulf, No. 1 Santa Maria, Santa Barbara Co.	5- 9-35	6,875	hd. sd. drilling
Midwest Oil Co., No. 1 Los Alamos, Santa Barbara Co.	2- 7-35	3,450	fishing
Zaca Oil Co., No. 1 Los Olivas, Santa Barbara Co.	20- 7-31	rig	suspended
Ohio Oil Co., No. 1 Goleta, Santa Barbara Co.	16- 4-28	143	sd. drilling
General Pet., No. 1 Goleta, Santa Barbara Co.	21- 4-28	4,533	gas—shut in
General Pet., No. 2 Goleta, Santa Barbara Co.	21- 4-28	4,350	gas—shut in
General Pet., No. 3 Goleta, Santa Barbara Co.	21- 4-28	6,150	Sespe format'n
General Pet., No. 133 Goleta, Santa Barbara Co.	21- 4-28	2,030	suspended
General Pet., No. 134 Goleta, Santa Barbara Co.	21- 4-28	2,053	suspended
General Pet., No. 136 Goleta, Santa Barbara Co.	21- 4-28	2,047	suspended
General Pet., No. 137 Goleta, Santa Barbara Co.	21- 4-28	2,050	suspended
General Pet., No. 138 Goleta, Santa Barbara Co.	21- 4-28	4,931	suspended
General Pet., No. 139 Goleta, Santa Barbara Co.	21- 4-28	2,051	suspended
Bowles Oil Co., No. 140 Goleta, Santa Barbara Co.	21- 4-28	2,065	suspended
U. S. Pet., No. 141 Goleta, Santa Barbara Co.	20- 4-28	2,004	suspended
U. S. Pet., No. 142 Goleta, Santa Barbara Co.	20- 4-28	2,012	suspended
U. S. Pet., No. 143 Goleta, Santa Barbara Co.	20- 4-28	2,010	suspended
El Camino, No. 149 Goleta Tideland, Santa Barbara Co.	22- 4-28	2,010	suspended
Bolsa Chica, No. 191 Goleta, Santa Barbara Co.	24- 4-29	4,650	Sespe format'n
Bellview Oil Co., No. 159 Goleta, Santa Barbara Co.	24- 4-29	2,099	suspended
Cochran, J. H., No. 1 Naples, Santa Barbara Co.	7- 4-29	5,134	cleaning out
Strickland & Tippet, No. 1-A Goleta, Santa Barbara Co.	19- 4-27	4,380	Sespe format'n
Soverign Oil Co., No. 1 Guadalupe, Santa Barbara Co.	29-10-35	5,500	suspended
Pacific Western, No. 1 Gibraltar, Santa Barbara Co.	14- 5-27	2,345	suspended
Associated, No. 1 Rincon Creek, Ventura Co.	19- 4-24	2,080	suspended
C. C. M. O. Co., No. 2-A Rincon, Ventura Co.	23- 3-24	10,030	plug 8,072
Continental, No. 1 Rincon, Ventura Co.	23- 3-24	6,124	to set pipe
Bell, H. H., No. 1 South Mountain, Ventura Co.	22- 3-21	mtl.	building rig
Pure Oil Co., No. 1 S. P. Canyon, Ventura Co.	15- 4-21	3,591	suspended
San Pedro Oil Co., No. 2 Sespe, Ventura Co.	13- 4-21	3,410	circulating
Magu Synd., No. 1 Oxnard, Ventura Co.	17- 1-21	4,910	suspended
Mex Cal Oil Co., No. 1 Conejo, Ventura Co.	12- 1-20	240	suspended
Hanson Pet., No. 1 Conejo, Ventura Co.	24- 1-20	100	suspended
Grahan & Loftus, No. 1 Goose Lake, Kern Co.	20-27-22	mtl.	building rig
Wilshire Oil Co., No. 1-A Buttonwillow, Kern Co.	7-29-24	7,000	suspended
Milham Expl. Co., No. 7 Buttonwillow, Kern Co.	6-28-23	2,738	cleaning out
Kent & McDonald, No. 1 Temblor Hills, Kern Co.	3-32-22	1,894	circulating
Calif. Oil Producers, No. 1 McKittrick, Kern Co.	30-30-22	4,270	hd. sd. drilling
Federal Drlg. Co., No. 1 Buena Vista, Kern Co.	30-31-24	5,367	suspended
General Pet., No. 1 Belridge, Kern Co.	30-28-21	5,380	cleaning out
The Texas Co., No. 1 Belridge, Kern Co.	22-27-20	5,045	suspended
Standard, No. 2 Belridge, Kern Co.	31-27-20	5,685	plug 5,628
Ohio Oil Co., No. 1 Belridge, Kern Co.	36-27-20	5,930	suspended
Continental, No. 1 Belridge, Kern Co.	36-27-20	5,475	flow 950 B/D
Wallace, K. C., No. 1 Belridge, Kern Co.	32-29-21	4,222	cleaning out
Rio Cal. Pet., No. 1 Shale, Kern Co.	2-27-18	2,355	suspended
Wicker, Sr., No. 1 Arvin, Kern Co.	12-30-28	3,550	hd. sd. drilling
Shell, No. 1 Weed Patch, Kern Co.	29-30-29	5,910	cleaning out
Osborn, Colter, No. 1 Weed Patch, Kern Co.	15-30-29	3,465	plugged back
Osborn, Colter, No. 2 Weed Patch, Kern Co.	15-30-29	1,990	suspended
Mohawk Oil Co., No. 1 Weed Patch, Kern Co.	32-30-29	6,150	suspended
Mohawk Oil Co., No. 2 Weed Patch, Kern Co.	4-31-29	rig	suspended
Standard, No. 1 Devils Den, Kern Co.	14-25-18	1,600	to replug
Hannah, Tom, No. 1 Devils Den, Kern Co.	25-25-18	3,050	suspended
Cumberland Oil Co., No. 3 Devils Den, Kern Co.	31-26-18	815	fishing
Temblor Dev. Co., No. 1 Blackwell Corner, Kern Co.	14-26-19	1,030	suspended
United Kern Pet., No. 1 Mojave, Kern Co.	26-10-14	1,065	suspended
Kendall Dev. Co., No. 1 Mojave, Kern Co.	27-11- 9	511	redrilling
Harding, J. B., No. 1 Mojave, Kern Co.	3-10-10	350	gr. sd. drilling
Ritchie, J. J., No. 1 Tejon, Kern Co.	33-11-19	6,035	suspended
Associated, No. 1 Jacalitos, Fresno Co.	22-21-15	6,197	sd. sh. drilling
Panorama Oil Co., No. 1 Carrizo, San Luis Obispo Co.	7-31-21	4,019	suspended
Trav El Oil Co., No. 1 Carrizo, San Luis Obispo Co.	7-32-22	2,030	testing
Paso Robles Synd., No. 1 Paso Robles, San Luis Obispo Co.	24-27-11	4,040	hd. sd. drilling
Latin Amer. Pet., No. 1 Shandon, San Luis Obispo Co.	21-27-15	4,615	recemented
Schilling, C., No. 1 Atascadero, San Luis Obispo Co.	24-28-12	1,250	suspended
Jergens, A. T., No. 1 Arroyo Grande, San Luis Obispo Co.	6-32-13	2,030	sd. sh. drilling
Brown, W. F., well No. 1, Monterey Co.	13-23-14	1,340	suspended
Irma Inv. Co., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,345	gas well—idle
O'Donnell, J. E., No. 1 Dudley Ridge, Kings Co.	7-23-20	1,635	gas well—idle
Eagle Oil Co., No. 1 Dudley Ridge, Kings Co.	15-23-20	rig	suspended
Kettleman Lakeview, No. 1-A Dudley Ridge, Kings Co.	20-23-20	2,040	cleaning out
Furmas, T. H., No. 1 Reef Ridge, Kings Co.	36-23-17	4,250	bl. sh. drilling
Seymour, L. W., No. 1 Avenal, Kings Co.	10-22-16	1,148	suspended
Twin State Oil Co., No. 1 Point Arena, Mendocino Co.	14-12-17	7,060	cleaning out
Orinda Pet., well No. 1, Contra Costa Co.	32- 1- 2	2,850	cleaning out
Gholson, F. N., No. 1 Porterville, Tulare Co.	3-22-27	1,250	hd. sd. drilling
Ducor Pet. Co., No. 1 Ducor, Tulare Co.	14-24-27	2,180	redrilling
Inland Valley Oil Co., No. 1 Visalia, Tulare Co.	24-17-24	3,093	suspended
Ellis & Stanford, No. 1 Tulare Lake, Tulare Co.	20-24-23	1,461	sd. sh. drilling
Colusa Oil Co., No. 1 Bush, Colusa Co.	31-15- 4	936	hd. sd. drilling
Oakdale Oil Co., No. 1 Oakdale, Stanislaus Co.	3- 3-10	4,192	hd. sd. drilling
Orland Oil Synd., No. 1 Orland, Tehama Co.	31-23- 3	2,520	redrilling

Natural Gas Industry Developments

GAS RATES IN TEXAS UNDER INVESTIGATION

AUSTIN, Tex., Aug. 10.—Atty.-Gen. James V. Allred announced that his department had begun a survey of gas rates to Texas consumers with a view to forcing a reduction. The survey will include production and transportation costs.

Grady Shipp, secretary of the Plainview Chamber of Commerce, had asked whether the South Plains Pipe Line Co. could be classified as a common carrier so it could be required to deliver gas to the city.

"We can buy gas and put our own distributing system in here and sell it much less if we could get it transported down here," Shipp wired. "We are not satisfied with our gas rates."

Attorney-General Allred in answering said the problem of attempts to reduce gas rates "confronts practically every city in the State. I have reached the conclusion that there should be a general reduction of rates throughout the entire State in line with the reduced prices and values of other commodities and services. It seems to me that this is true of all public utilities services.

"In view of my convictions in the matter," Allred said. "I have been making a study of the whole utility situation. This office is making a survey of rates which are being charged the consumer by the gas companies, as well as production and transportation costs. When this is completed I have determined to take appropriate action, in the courts if necessary, to prevent discrimination between the cities and towns of Texas as well as between this and other states, and to effect a general scaling down of utility charges."

A movement to have natural gas rates all over Texas subjected to an investigation by the State Railroad Commission got under way in Dallas Thursday during a meeting of representatives of 23 cities.

O. J. S. Ellingson, city manager of Sherman, called the meeting for members of the League of Twenty-one Cities, and Harvey W. Draper of Houston, executive secretary of the League of Texas Municipalities, was chairman.

A special committee of three city attorneys and Mr. Draper was appointed to draft a resolution asking the Railroad Commission to make the investigation. Those appointed were Rinehart Rouer of Fort Worth, John Abney of Hillsboro and R. W. Stoddard of Denison. This committee also will seek to have officials in the 593 Texas municipalities using gas to seek the investigation by the Railroad Commission.

Towns represented were Denison, Sherman, Sunset (Dallas), Sulphur Springs, Rockwall, Leonard, Honey Grove, Bonham, Corsicana, Hillsboro, Goose Creek, Cleburne, Ennis, Waxahachie, Denton, Whitesboro, Fort Worth, Gainesville, Wichita Falls, Jacksonville, Bowie and Houston.

Mayor Frank Morris, Jr., of Gainesville was made permanent chairman of the group that will seek the Railroad Commission investigation. Mr. Draper said that the Railroad Commission will have $80,000 available during this month with which they can carry on the work. Towns were represented that are served by the Lone Star Gas Co., the Community Natural Gas Co., the Houston Natural Gas Co. and the United Gas Co., Mr. Draper said.

Representative Elbert M. Barron of Sherman was advised by the attorney general's department that the initiative in rate reduction cases must be taken by the cities seeking the reduction and not by the gas utilities division of the Railroad Commission.

The opinion was asked by Mr. Barron in behalf of H. G. Turk, mayor of Sherman. Sherman and Denison have been dissatisfied with gas rates for several months.

LONE STAR FILES SUIT AGAINST FORT WORTH

FORT WORTH, Tex., Aug. 10.—The injunction suit against the city of Fort Worth to prevent the city from taking over the properties of the Lone Star Gas Co. filed by the company following an election in which the voters authorized the city to go into the natural gas business, contends the city is without authority to condemn the company's property since no provision is made for any method of legal procedure to pay the value of the property and the severance damages to other properties of the Lone Star Gas Co.

The application for the injunction states that the city is practically up to its bond limit and to the limit of its legal tax rate and has no money in its treasury.

The city recently accepted a contract offered by the Shamrock Natural Gas Co., a subsidiary of the Shamrock Oil & Gas Co. of Pittsburgh, Pa.

REFUSED PERMIT

HARRISBURG, Pa., Aug. 10.—The Public Service Commission has refused to approve the application of the Interstate Public Service Corp., a Delaware corporation, for the right to do business in Pennsylvania and to supply natural or manufactured gas in the boroughs of Troy and Sylvania, Bradford County. By the same order, the commission approved the contracts of the Allegheny Gas Co., Pittsburgh, to supply gas to the boroughs of Troy and Bradford.

In refusing the applications of the Interstate corporation the commission said "the foreign corporation owns no gas production properties in Pennsylvania and has entered into no arrangements or undertakings which would assume the rendition of the service contemplated by its application."

GLENCOE GAS FRANCHISE

CHATHAM, Ontario, Aug. 3.—The town of Glencoe, Ontario, has granted a natural gas franchise to the Southern Ontario Gas Co. The latter is planning to pipe gas from its new field in Mosa Township east of Newbury, but the pipe line and distribution system may not be constructed pending development of further production.

SEEK GAS ON POOR FARM

INDEPENDENCE, Kans., Aug. 8.—Plans are being considered by the board of Montgomery County Commissioners for drilling gas wells on the county poor farm to furnish fuel for the farm.

FIND GAS NEAR ATCHISON

ATCHISON, Kans., Aug. 8.—Gas apparently in paying quantities has been struck in a well being drilled on the Fred Kidwell farm, 8 miles southeast of Atchison in Platte County, Missouri. The gas was encountered at a depth of 530 feet. The well is being developed by the Atchison Oil & Gas Co.

TO RENEW FRANCHISE

Citizens of Morris, Okla., have voted a franchise renewal for the Oklahoma Natural Gas Corp. continuing the rate of 48 cents.

TAHLEQUAH FRANCHISE

Citizens of Tahlequah, Okla., will vote in the near future on a gas franchise proposal submitted by Tonnes Dennison of Tulsa, who has secured approval of his proposition by Tahlequah city council.

SHAWNEE FRANCHISE TO WESTERN SERVICE

Shawnee, Okla., gave the Western Service Corp. the gas franchise for the next 25 years by virtually a 2-to-1 count over the Oklahoma Natural Gas Corp., former franchise holder, at an election August 5.

The Oklahoma Natural has served Shawnee without a franchise since October, 1929, when its grant expired.

Both franchise proposals incorporated reduction of rates, the Oklahoma Natural from 50 to 45 cents per 1,000 feet, and the Western Service proposing a 44-cent rate. The latter also has promised a $450,000 expenditure and much work for the unemployed. "Keep insured with Oklahoma Natural" was the opposing campaign slogan. Campaign newspapers, the radio, house-to-house canvasses, tire covers and various forms of advertising carried the issue to the voters.

MANUFACTURERS SECTION

Members of the Manufacturers Section, American Gas Association, have been called to meet in annual session, September 17-18, at Detroit, Mich. Prominent representatives of the gas industry will appear on the program, according to announcement made at association headquarters. Apart from the general meeting, which will occupy the opening day, there will be separate meetings of the gas range, water heater and space heater groups. It is expected that about 500 manufacturers of gas appliances and equipment will be on hand for this session.

STOCKWELL PROMOTED

B. P. Stockwell of Bristow, Okla., manager for the Oklahoma Utilities Co. since 1927, has been promoted to the position of rate and valuation engineer for the Oklahoma concern. The Empire company, whose general offices are in Philadelphia, has utility operation in about 200 cities and towns in 11 states. Mr. Stockwell's headquarters will be established in Oklahoma City. The gas operations of the company will be directed from Bristow by E. A. Smith as general superintendent.

WELLINGTON GAS RATE

WELLINGTON, Tex., Aug. 8.—In its effort to secure lower gas rates, the city council of Wellington has called an election for September 8 to determine whether it will vote bonds of $65,000 for the purpose of installing a municipal gas distributing system. This action followed a conference between Mayor W. W. Neeley and officials of the Northern Texas Utilities Co., at which time the company asked for additional time before it would be ready to announce a new rate schedule.

"We believe we have waited long enough on the gas company," Mayor Neeley declared.

NEW GAS COMPANY CHARTERED

ALBANY, N. Y., Aug. 8.—The Meridian Gas Corp. of Auburn, capitalized at $500,000, was chartered by the secretary of state to develop gas and oil properties. The incorporators are John P. Doyle and Frank C. Raymond, Bradford, Pa., and C. E. Dudley of Cato, N. Y.

GAS OPERATORS UNITE IN THE WAYNE FIELD

ELMIRA, N. Y., Aug. 8.—A gas purchase contract between the Belmont Quadrangle Drilling Co. of Bradford, Pa., and the Cunningham Natural Gas Corp. of Bath, by which the former will buy all gas produced by the latter company, is announced.

The transaction includes the gas from the present Cunningham Natural Gas Corp.'s seven producing wells in the Wayne Field and all in addition which may be drilled on the estimated 27,000 acres under lease to the Cunningham company in the area. This contract unites two of the largest operators in the Wayne Field.

Announcement of the contract follows closely on plans given out for the laying of a pipe line from the Wayne gas field to Hammondsport, Bath and up the Coshocton Valley to Dansville under a contract between the Belmont Quadrangle Drilling Corp. and the Iroquois Gas Co. of Buffalo, which supplies Buffalo with gas. Franchises to supply towns along the line have been secured and the laying of the pipe line will be the next move. Present plans call for the completion of the line by January 1, 1932.

John T. Cunningham of Bradford, Pa., is president of the Cunningham company which was recently reorganized. Other officers and directors are James M. Fraser of Bradford, Pa., vice president; Frederick D. Gallup of Bradford, Pa.; Wilson R. Campbell of Bath; Frank W. Calkins of Bradford, and Robert E. Cole of Bath.

The Iroquois company already has contracts to purchase gas from the Belmont company and the Belmont group has the contract for the 8-inch Iroquois line from Dansville to the Wayne Field.

MEXICO, MO., FRANCHISE

MEXICO, Mo., Aug. 8.—A refusal of the Missouri Power & Light Co. to comply with the city's demand that the gas service be converted from artificial to natural gas without the granting of a new franchise was filed with the city by D. W. Snyder, Jr., president of the company.

Natural gas is available from a pipe line recently completed to a point near the city, and the city has urged the distributing company, which has operated without a franchise since 1926, to make the connection and distribute natural gas without a new franchise. Mr. Snyder's statement said additional capital expenditure would be required to make the change, and the company did not feel it could "prudently and legally" increase its investment in Mexico without a new franchise.

NEW KANSAS COMPANY

HIGHLAND, Kans., Aug. 8.—The new Allen Gas Corp., capitalized at $100,000, has been given a charter and has gas-producing wells in Miami, Franklin and Anderson Counties, in addition to being interested in some 50 wells near Paola. The company will operate the La Cygne Gas Co. Ben D. Allen, president of the First National Bank, is president of the new company.

SUGGESTED SHORT COURSE

William H. Crutcher, eastern division manager of the Oklahoma Gas & Electric Co., died recently at his home in Muskogee, Okla. Mr. Crutcher's suggestion originated the Southwestern Gas Measurement Short Course held annually at the state university at Norman, which has become the leading project of its kind in the United States.

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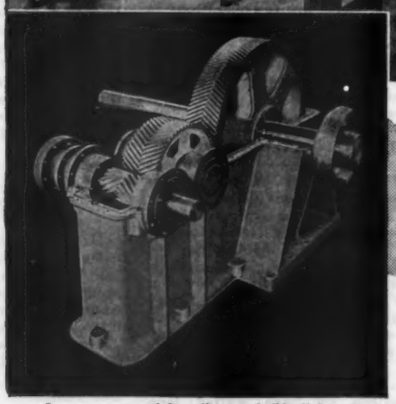

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Stark County Busiest in Central Ohio

No Completions in Lima, Indiana or Illinois. Eight in Ohio. Kentucky and Michigan Operations

By George A. Whitney
Staff Correspondent, Central West Fields

FINDLAY, Ohio, Aug. 10.—In three of the leading fields of the Central West, Lima, Indiana and Illinois, no new wells were reported for the week, which is out of the ordinary. The Central Ohio area is not showing its usual number, there being but nine, of which two were oil wells, six were gas wells and one was dry. A few wells are drilling in parts of the old Lima Field of northwestern Ohio and several almost due for completion have been held back on account of the extreme hot weather. Operators the past few days feel as though prices will come back in the near future, owing to the recent advance of 20 cents a barrel, bringing Lima crude to 70 cents; Indiana, 35 cents; Princeton, Indiana, 55 cents; Illinois, 55 cents, and Western Kentucky crude, 50 cents.

The eleventh annual picnic of oil workers of northwestern Ohio will be held at Riverside Park at Findlay, Ohio, on Wednesday, August 19. It is expected that some 5,000 will attend from Hancock, Wood, Allen, Mercer, Sandusky, Seneca, Hardin, Wyandot, Auglaize, Lucas, Ottawa and other oil-producing counties of the area. John C. Askam, Findlay, is president, and Denver Williams secretary of the group. This includes pipe line gaugers and those interested in production.

CENTRAL OHIO

Central Ohio Field, which has been among the most active in the Central West Field, showed a drop, there being but seven completions reported and one just outside the limits of the field. Of this number two were producers with an initial of 40 bbls., one dry hole and five gas wells, and in new work starting there were three locations made and three wells started spudding, a total of but six, the lightest week for some time.

In Ashland County no new completions were reported, there being two new locations and one well drilling.

In Lorain County Elyria Steel & Tube Co. drilled in a fair gas well on the Paulson & Christensen property, Section 6, Carlisle Township, the gas being found from 2,403-27 feet. Ohio Fuel Gas Co. is drilling No. 2-5,538 John Toomes, Lot 98, Columbia Township.

In Medina County, Chatham Township, Edson and others' No. 24 Marcus A. Frank, Lot 20, pumped an initial of 20 bbls. from 392-438 feet and same company's No. 15 George W. Packard, Lot 4, also produced 20 bbls. the first 24 hours from 335-50 feet.

Stark County Active

Stark County, where more drilling operations are under way than in any part of the Central Ohio Field, drilled in four wells. Medford Oil & Gas Co. found a nice gas well in No. 3 John C. Easterday, Section 35, Jackson Township, from 4,392-4,424 feet. Stolz Oil & Gas Co. also brought in a gas well above the average in No. 2 on the E. B. Erlinger farm, Section 26, same township, from 4,440-66 feet. East Ohio Gas Co. hit a rich gas vein in No. 1 Eliza Hall farm, Section 13, same township, from 4,430-62 feet, and F. A. Brendall and others also hit a good gas well in No. 1 J. C. Steiner farm, Section 16, same township, in the Clinton lime from 4,256-92 feet. This county shows a total of 21 drilling wells and rigs.

In Knox County, Howard Township, H. E. Perkins drilled a dry hole on the Gertrude farm, Lot 17, from 2,690-2,730 feet.

In Morrow County, Chester Township, H. E. Perkins' test on the C. R. Levering farm, Sections 9 and 5, had not reached any commercial production at a total depth of 3,620 feet.

In Meigs County the Ohio Fuel Gas Co. has a light gas well in No. 1-5,523 H. H. Genheimer farm, Section 25, Bedford Township, in the Second Berea sand at a total depth of 1,590 feet.

In Gallia County, Cheshire Township, the Gallia Development Co. got a hole full of water in No. 2 Sallie Steenberger farm, Section 22, in the Maxon sand from 715-40 feet.

KENTUCKY

Oil in the Western Kentucky Field is quoted at 50 cents a barrel, which includes the product in Hart and other adjoining counties, and further advances are looked for, and if they do not come the wells will be kept shut down.

Owensboro operators who suspended pumping of their wells when the price was slashed to 35 cents a barrel about three weeks ago are holding out for a still higher price than is being offered now before they resume operations, it was stated. Most of the operators who joined in the complete shutdown move are holding for $1 a barrel. The increase made in the Legrande Field of Hart County was announced by the Stoll Oil Refining Co. of Louisville and was met by the Producers and other pipe lines in the field, it was stated. The price of Hart and Barren Counties prior to last increase of 15 cents had been 35 cents a barrel. The price of eastern Kentucky crude was raised from 40 to 55 cents.

Only four completions were reported from the Western Kentucky Field, two being gas and the same number were dry holes.

In the Greenville Field of Muhlenberg County, Ellis & Young's No. 1 on the Jesse Carey farm, approximately a mile to the south of Greenville, and not far from the oil field in that county, developed a nice gas volume at a shallow depth of 600 feet. No other development work is reported under way in the county.

In the Owensboro Field of Daviess County, S. A. Cobb and others' second test on the J. P. Howard 106 acres, near the Walnut Grove School in the Crow Pool, came in a duster at 810 feet. S. H. Russell and others are drilling No. 1 Lulu Crow farm, in the same pool.

In the Niagara Pool, Henderson County, the Pearson Petroleum Co.'s second test on the George Fulkerson farm, came in a dry hole.

S. H. Cobb and others are drilling on the Remus Cundiff farm, in Ohio County.

Princeton, the county seat of Caldwell County, is now using gas for cooking and heating, furnished by the Indiana-Kentucky Natural Gas Co., through the gas line from Owensboro.

MICHIGAN

No new completions have been reported from the Mount Pleasant-Midland Field, in central Michigan, since the bringing in of the well on the A. J. Struble farm, SW SE, Section 10, Greendale Township, Midland County, and in the new eastern extension to the older field, 13 miles east of Mount Pleasant by Walter L. McClanahan on Saturday, July 18, which caught fire from an unknown origin causing the death of 10 persons and injury to many more. Later fire broke out in the pump house but it was checked before serious damage resulted. This was the third fire at the well since it was brought in.

The natural gas flow from No. 1 Struble oil well equals if it does not exceed any of Michigan's oil wells, in the opinion of different field men. So far as known no gauge of the gas pressure at the well has been made but in the judgment of many scouts who have seen the well the gas flow is heavier than ordinary in the local oil fields. By a special apparatus the gas flow is piped from the casinghead several hundred feet away where it is burned to prevent the gas from settling around the well site and becoming a fire hazard. Oil production is between 600 and 800 bbls. a day.

The next completion in the new extension of the pool in Greendale Township, Midland County, is the Pure Oil Co.'s No. 1 A. Bernard farm, Section 8, which is close to the Dundee formation.

Broomfield Gas Field

The Broomfield gas field, about 12 miles west of Mount Pleasant and in Bloomfield Township, Isabella County, the biggest gas field in Michigan, became the center of interest again as the Pure Oil Co. is getting close to the formation in which the gas wells in the field are found. This company's new well is No. 3 on the Willie farm, SW NE, section, and west of the other good gas wells in the area, and an important test. Both No. 1 and No. 2 on the same farm are good gas wells and there are five other big gassers in the pool giving it an aggregate potential open flow production of approximately 30,000,000 feet daily.

Crude Prices Up

The price of crude oil jumped on Saturday, July 25, from 37 to 57 cents a barrel, according to price quotations posted by the Pure Pipe Line Co., the largest purchaser of crude in the Isabella Midland Field. Roosevelt Oil Co., also a buyer of a large quantity of local crude, posted corresponding price changes. News of the increased price of crude caused the first stir of optimism among local oil field operators for months. However, drilling is not expected to show increased activity until the price ascends near the $1 level.

The 20-cent-a-barrel increase in price was the first over a period of several months which found the value of crude oil fall from more than $1 a barrel to 37 cents, lowest quotation in the field. Despite the low price in the field, quotations consistently have been maintained well above the level of western and Mid-Continent quotations.

Another outlet for crude in the local area is increasing as the Mount Pleasant Sugar Co.'s refinery will use the crude for fuel, instead of coal. Crude oil burners are now being installed in the plant. The plant usually required from 18,000 to 20,000 tons of coal, while it is expected that 60,000 bbls. of crude oil will be required. The Pure Oil Co. has contracted to supply the crude oil for this season.

Southeastern Michigan

R. J. Coykendall in a hunt for gas drilled in his second well on his own farm, SE SE, Section 34, Van Buren Township, Wayne County, struck a nice show of gas, but water was drilled into, in fact the water came with the gas, with little chance of being able to separate them. No. 1 which was drilled on the same farm, a couple of weeks ago, got the same results. These two gas tests are about a mile east of the good dry gas well on the Ray Straight farm, where the gas was found at a depth of 80 feet.

The gas test being made by Detroit parties on the Swartz farm, and about one-fourth mile south of the Straight farm gas well, at 104 feet struck water and will be drilled deeper. Gordon and Sons of western Monroe County are doing the contract work.

The deep wildcat test of the D. O. H. I. Oil Corp. was around 1,300 feet on the W. Farrow farm, SE NW, Section 13, Riga Township, Lenawee County, and in what resembles the Niagara limestone, but it will be drilled into the Trenton lime. This well had a nice shallow gas volume. It is about a mile or so out of the hamlet of Ottawa Lake, about 15 miles northwest of Toledo. Graber and others' test on the S. E. Lawrence farm, Sections 6 and 8, Ridgeway Township, Lenawee County, has shut down at 1,900 feet.

Work has not started on spudding on the test of Alfred Violet and others on the Munson farm, in Dundee Township, Monroe County, 2 miles northeast of Dundee, on the south side of the Raisin River. This well is to be a deep test to the Trenton lime.

OPERATORS IN EASTERN FIELDS GRATIFIED BY ADJUSTMENTS

By Staff Correspondent

PITTSBURGH, Pa., Aug. 10.—Operators in the Eastern fields feel considerably gratified at the second increase in the price of all Pennsylvania grade crude and are inclined to feel that, despite further crude oil flooding in the West, the industry in the East has established itself on a solid basis. Recognizing in plenty of time that there was an overproduction, the Pennsylvania Crude Oil Producers Association appointed an oil conservation board with powers to act and to direct, and with the cooperation of the majority of the producers and all the large operators, the previous 2,000 bbls. of crude a day in excess of demand has disappeared until the demand is somewhat in excess of production and stocks are being withdrawn. This does not indicate the advisability of withdrawing, nor at the present time reducing, the 50-30 curtailment program until the heavy seasonal demand has passed and until the inroads into crude stocks may be viewed.

The lower eastern fields were presented with 13 new completions during the week, and two dry holes were also reported. Four wells were oil producers with an initial production of but 42 bbls., nine completions were gassers ranging from 2,000,000 feet a day down to very light wells.

SOUTHEAST OHIO

Southeast Ohio presented the best completion for the week in a test well on the property of the C.&O. Railroad Co. in the SE of Section 23, York Township, Athens County. It was completed by Waley and Baughman and others in the Clipton sand at a depth of 3,340 feet and is estimated in excess of 2,000,000 feet a day. Another fair gas well was the fifth well of the Atha Oil Co. on the W. A. Atha farm in Falls Township, Muskingum County. It is likewise a Clinton sand well and at a depth of 3,762 feet and is rated good for 500,000 feet a day.

The remaining four completions in Southeast Ohio were oil producers, three of which were drilled in the shallow sands of Medina County and by the successful operators in that district, E. R. Edson

(Continued on Page 118)

Personal Paragraphs About Oil Men

J. Elmer Thomas sailed on the Ile de France for a European tour.

* * *

Charles Maule, land and lease man with the Stanolind Oil & Gas Company at Tyler, Tex., has been transferred to Muskegon, Mich.

* * *

Harry Meredith in the land department of the Atlantic Oil Producing Company at Dallas, Tex., is spending his vacation fishing at Aransas Pass, Tex.

* * *

C. O. (Carl) Jensen, American Iron & Machine Works Company, California representative, is spending several weeks in the East Texas Field with headquarters at Longview.

* * *

W. A. Raymond, general manager of the Houston Foundry & Machine Company, manufacturer of oil field equipment, Houston, Tex., is spending his vacation in Kerrville, Tex.

* * *

John H. Tucker, general superintendent of the Gulf Production Company, Houston, Tex., is in New York on a two weeks' vacation trip. He made the trip by water, sailing from Galveston, Tex.

* * *

John Powers, of the General Petroleum Corporation's production department, has returned to the company's Los Angeles, Calif., office following a pleasant vacation spent at Lake Tahoe.

* * *

S. P. Farish, president of the Navarro Oil Company, and also of the Reed Roller Bit Company, Houston, Tex., is spending a vacation in southern California. He is accompanied by his wife and family.

* * *

J. B. Wheeler, independent oil man, Houston, Tex., has returned to Bradford, Pa., his former home. There he will study oil and gas possibilities of that State and New York, returning to Houston this autumn.

* * *

Edward A. Small, Jr., formerly sales engineer, Jones & Laughlin Steel Corporation, Pittsburgh, Pa., has been appointed field engineer for A. M. Byers Company. His headquarters will be in the Conway Building, Chicago.

* * *

Frank P. Sterling, vice president and director of the Humble Oil & Refining Company, Houston, Tex., has returned to his office following a pleasure trip of several months in Europe. He was accompanied by his wife and daughter.

* * *

M. E. Mockley, manager of the gasoline department for the Amerada Petroleum Corporation, Tulsa, has returned to his office after three weeks' vacation spent in the Minnesota lake region where he reports the fishing was very good.

* * *

J. M. Wadsworth, formerly vice president in charge of manufacturing with the Independent Oil & Gas Company in Tulsa, prior to its consolidation with the Phillips Petroleum Company, is now with Foster Wheeler Corporation. He has been touring the Mid-Continent oil fields.

* * *

R. E. Wertz, formerly vice president and general superintendent of operations with the Producers & Refiners Corporation at Independence, Kans., has been transferred to Amarillo, Tex., where he is now president and general manager of the Amarillo Gas Company and West Texas Gas Company, both subsidiaries of the Prairie Oil & Gas Company.

* * *

The Southern Crude Oil Purchasing Company, Fort Worth, Tex., having been taken over by the Stanolind Oil & Gas Company, A. L. Selig will be in charge of the geological department in the State of Texas, and R. D. Feltner will be in charge of the land department. They held similar positions with the Southern Crude Oil Purchasing Company in Texas, in the Fort Worth office.

Ernest Kells, who has been drilling in Persia and Mesopotamia for several years, is on furlough at Copleston, Ontario.

* * *

Frith C. Owens, geologist for the Humble Oil & Refining Company at McAllen, Tex., has been transferred to the Laredo, Tex., office.

* * *

Harry Sample, Houston, Tex., scout for the Vacuum Oil Company, Gulf Coast district, has returned from a two weeks' motor trip through Colorado.

* * *

T. A. McLean, who operated in Southwest Texas quite extensively in 1920 but has been absent for several years, is back at San Antonio looking over the prospects.

Men of the Industry

William Groundwater

William Groundwater, for the last 20 years an employe of the Union Oil Company of California and at present director of transportation for that organization, is a Scot, born on one of the Orkney Islands. Coming to the United States at the age of 20, Mr. Groundwater soon afterward journeyed to the Pacific Coast and immediately began his association with the oil industry, his first job being that of helper on the construction of a pipe line for the Union Oil Company in the San Joaquin Valley. In 1911 and 1912 he served as engineer of the Creston pump station, and then was transferred to pipe line headquarters of the company in San Luis Obispo and placed in charge of mechanical equipment and personnel.

In February, 1913, Mr. Groundwater was made superintendent of both the Producers Pipe Line and the newly acquired Lompoc Pipe Line. In 1922 he was promoted to the post of assistant manager of transportation and a year later became head of the department. He was elevated to the post of director of transportation last February. In this position he is charged with responsibility for all pipe lines and storages, steamships, marine equipment and railroad transportation.

Mr. Groundwater recently was re-elected a director of the Pacific American Steamship Association. He is also a director of the Los Angeles Steamship Association, a member of the executive committee of the Marine Service Bureau, the American Committee of Lloyd's Register of Shipping and the American Society of Mechanical Engineers.

F. O. H. Searle and H. C. Denton, of the Sinclair company, were visitors last week in the East Texas fields.

* * *

Alex McRae, of London, Ontario, is home on furlough from the Peruvian fields, where he has been working for the International Petroleum Company.

* * *

Oliver W. Muff, of the Commercial Iron Works, Los Angeles, Calif., is calling on the trade in the Mid-Continent and Gulf Coast territory.

* * *

George Luck, formerly representative of the Reed Roller Bit Company in East Texas, has joined the staff of the Houston Foundry & Machine Company in the East Texas Field.

* * *

W. F. Raber, the new president of the San Diego, Calif., Consolidated Gas & Electric Company, was formerly manager of Enid's Electric Light & Power Company, leaving for San Diego, in 1924.

* * *

George M. Swindell, for a number of years secretary of the Chamber of Mines and Oil, now the California Oil and Gas Association, has become affiliated with the Oil Producers Sales Agency.

* * *

W. N. Finnegan, Jr., assistant to W. S. Farish, president of the Humble Oil & Refining Company, Houston, Tex., is getting in a little vacation at Kerrville, Tex., where his family has been spending the summer.

* * *

L. S. Hamaker, advertising manager of the Republic Steel Corporation, Massillon, Ohio, has been appointed manager of sales promotion with headquarters at Youngstown, Ohio, and assumed that office August 3.

* * *

A. W. Ambrose, vice president and assistant general manager, and L. A. Ogden, production engineer, both of the Empire Oil & Refining Company, Bartlesville, Okla., and their families, have been spending a vacation in Minnesota.

* * *

W. O. Stowall, superintendent of the casinghead gasoline department of the Humble Oil & Refining Company, Houston, Tex., has resigned that position and has become associated with E. L. Farmer at Wichita Falls in oil field contracting work.

* * *

Judge R. L. Batts, one of the Texas State University regents and formerly general attorney for the Gulf Production Company, addressed the San Antonio section of the American Association of Petroleum Geologists on "Some Legal Phases of Conservation."

* * *

H. W. Harts, assistant superintendent for the Amerada Petroleum Corporation, gasoline department, Tulsa, has left for his vacation which he will spend in the upper Great Lakes region of Michigan and southern Canada. He will be gone two weeks.

* * *

R. D. Risser, an engineer with the Shell Petroleum Corporation, and D. B. Dow, with the Indian Territory Illuminating Oil Company, have been put on the committee of the "disposal of production wastes," of the American Petroleum Institute's division of production.

* * *

E. J. Nicklos, vice president in charge of production for the Continental Oil Company, together with other officials, on a tour of the company's properties in California, was met at Los Angeles by R. E. Collom, manager of the California division for Continental. Besides Mr. Nicklos, the party includes L. P. Carpenter, general superintendent of the Oklahoma-Kansas division; G. H. McIntyre, general superintendent of the Texas-New Mexico division; R. S. Shannon, general superintendent of the Rocky Mountain division; and A. H. Bell, production superintendent of the California division.

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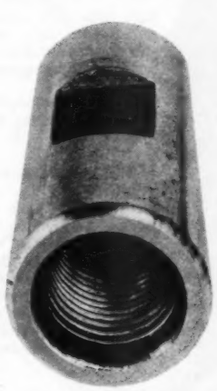
The coupling is faced and ground accurately to the axis of the thread bore. This insures equal tension at every degree of the pins circumference.

The ground faced coupling, properly tightened with an ordinary sucker rod wrench, grips the shoulder of the rod securely and will not back off.

The history and experience of twenty million feet of D + B RODS in operation throughout the Mid-Continent Oil Fields is a potent testimonial and insurance against pin breaks and partings from unscrewing.

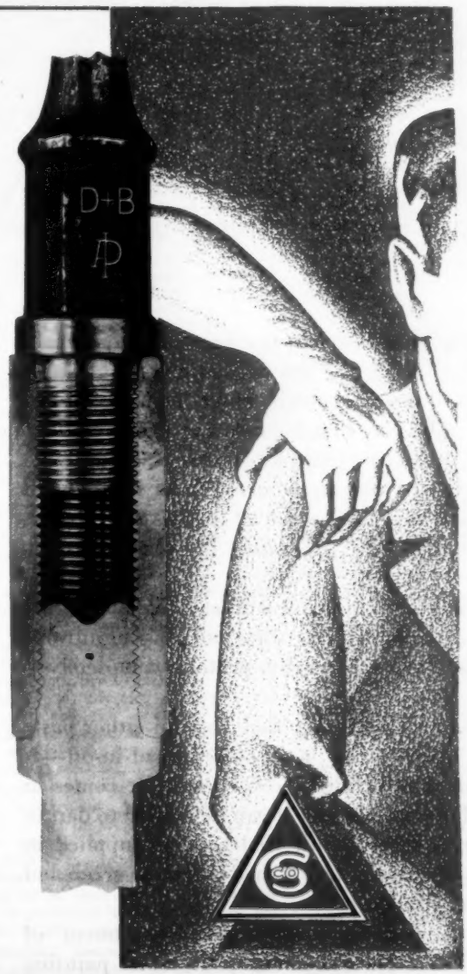
The D + B Heatreat Sucker Rod equipped with the API thread, a "Ground to Grip" faced coupling, together with the prime factor of insurance, namely *Highly Developed Metallurgy*, in our heat treating process, make the D + B Rod unsurpassed.



The ground face of D + B Couplings assures perfect joints as in cut-away section at extreme right.

Cut-away section at right shows how tightly the ground face of the D+B Coupling grips the shoulder of the sucker rod.

Figure at left shows joint made with ordinary coupling. Note space enough for a piece of paper to be inserted between face of ordinary coupling and shoulder of sucker rod. This is a bad joint.



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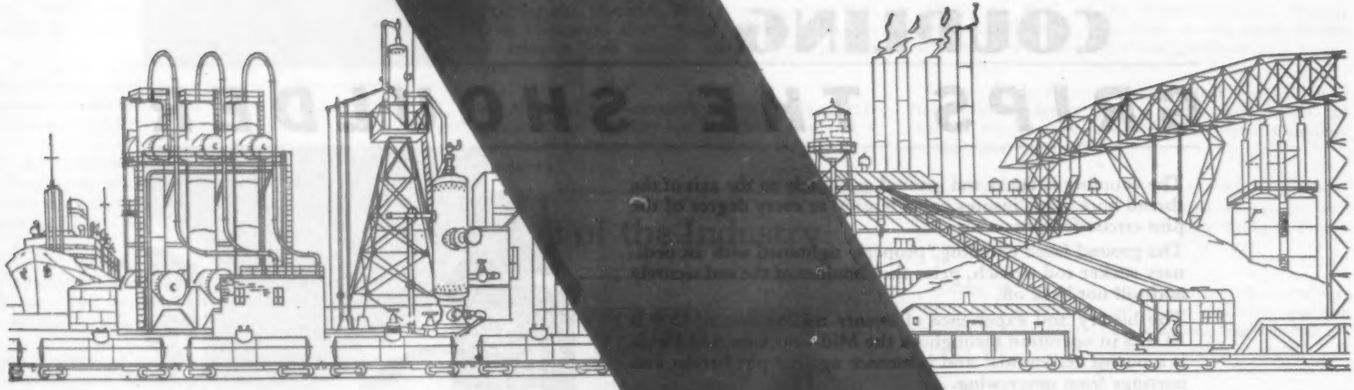


JUST as the coastwise skipper breathes more easily when he "picks up" the oscillations of a charted beacon, so does the maintenance man feel more secure when he sees that his iron and steel structures have their protective coatings of pure red-lead.

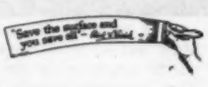
For engineers and maintenance men in all fields have learned that pure red-lead defeats the destructive forces that bear the names of weather, corrosion, rust.

Dutch Boy Red-Lead is a fine, uniform, highly oxidized pigment that furnishes an elastic, durable coating that sticks tight—that protects completely—that wears long.

You can buy Dutch Boy Red-Lead in either paste or liquid form. The paste—Red-Lead-in-oil—is easily thinned to brushing consistency. It comes in the natural orange-red and it can be shaded to darker colors. Dutch Boy Liquid Red-Lead is supplied in six colors—orange-red, two shades each of green and brown...and black.

We invite you to consult our Department of Technical Paint Service about your metal painting problems. Also, ask our nearest branch for helpful booklet—"Structural Metal Painting".

LITHARGE of correct physical character and extreme chemical purity is a necessity in oil-refining. Such litharge is made by the makers of Dutch Boy Red-Lead and Dutch Boy White-Lead. You can always rely on its unvarying uniformity. Our nearest warehouse can give you quick shipment.



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Field Problems and Their Solution

EDITED BY THOMAS F. SMILEY

In order that men connected with the drilling, producing and transporting branches of the petroleum industry may procure quickly a solution of many problems confronting them from time to time in their work, The Oil and Gas Journal has arranged with leading engineers and other recognized authorities to answer questions submitted by readers of this publication pertaining to the work of drilling and producing crude oil and transporting this product.

Everyone is invited to submit questions freely. These questions will be submitted to proper authorities by Mr. Smiley, who edits the page, and answers, based on the best available information, will be published. Each question should give as much detail as possible, especially where it relates to matters where depths of sands, types of sands and operations on adjoining properties would have a bearing on the problem involved. The source of all questions will be considered as confidential and only initials will be published in connection with the question.

In this connection, The Oil and Gas Journal will be glad to publish articles from field men who have devised new methods or practices which are improvements.

In case an immediate answer is important, one will be given by mail if the writer requests it.

ANOTHER CORROSION LOSS

Since it is a fact that tankers carry cargoes of oil with varying high degrees of sulphur content, isn't the corrosive effect of such oil felt on these vessels? There would seem to be no reason why the life of these oil-carrying ships would not be shortened just as the life of tanks and machinery on land is shortened. I never have seen anything written on this point.—T. T. A.

It is true that the destructive influences of sulphur are shortening the life of oil tankers, presenting another count against this enemy of the oil man. Doctor Shutt, well-known German authority, is among those who have pointed out the costly character of the damage inflicted on oil-carrying vessels as a result of the properties of some of the crude oil and refined products shipped in bulk.

The life of a tanker before the war was the same as that of other cargo vessels, but is now put at 16 to 18 years, and in certain conditions as low as 12 years, Doctor Shutt says. The accelerated deterioration is attributed to the continuous increase in the shipments of motor spirit, the intensive use of the vessels and the consequent greater strain on hull and machinery, and corrosion in the tanks caused by chemical action of the oil.

The parts particularly affected are the expansion chambers, the deck and cross beams and the rivets. Oils containing sulphur, acid or water are especially harmful, the chief offenders being petrol, benzole and other light oils, particularly when air and moisture have come into contact with them.

The material of which the ship is constructed is another factor in the extent of the corrosion. Tankers built of iron withstood the destructive chemical reactions better than steel vessels. English experts now favor the use only of special rust-proof steel, while some American builders are using steel containing 0.3 per cent of copper.

The financial aspect of the effects of corrosion may be illustrated by the following examples: £100,000 had to be expended on a Norwegian vessel of 16,870 tons after 12 years, a sum equivalent to two-thirds of the original cost. Another Norwegian prospective purchaser of an 11-year-old motor-driven tanker withdrew from the deal when it proved that entirely new engines would have to be fitted.

SAVING WATER IN DRILLING

You printed an interesting table recently showing the increase in boiler horsepower gained by heating the feed water in experiments conducted by Mr. Reistle of the Bureau of Mines at a drilling well. I want to ask if a similar table was made up showing the saving in water requirements, as I believe the experiment was to cover that phase of the problem also. If there is such a table I would appreciate seeing it printed. I would be glad to have any other facts in this connection, in which I am particularly interested.—Y. E. G.

The theoretical saving in water based on the condensation of steam required to heat the feed water in an open type boiler feed water heater is given in the following table prepared by C. E. Reistle as a result of his experiments:

Temperature of feed water to heater, °F.	Temperature of water leaving feed water heater 210° F. per cent	200° F. per cent	190° F. per cent	180° F. per cent
40	14.86	13.99	13.12	12.24
50	14.11	13.23	12.35	11.47
60	13.35	12.46	11.57	10.68
70	12.57	11.67	10.77	9.88
80	11.78	10.87	9.97	9.06
90	10.97	10.06	9.14	8.23
100	10.15	9.23	8.30	7.38

The theoretical saving in water due to the recovery of steam condensed by heating the feed water from 50° to 190° F. is 12.35 per cent, whereas the actual saving was between 20 and 22 per cent, the calorimetric tests on the exhaust steam indicated that the steam entering the heater carried between 8 and 9 per cent water. This water, in addition to the steam condensed in the heater due to radiation of heat, was responsible for the actual recovery of 20 to 22 per cent. If the feed water had been heated to 210° F. in the heater, 1.76 per cent more water would have been obtained. Additional water could also have been recovered by connecting the exhaust from the steam separator on the engine and the exhaust from the boiler feed pumps into the exhaust steam header. This should be done in all actual service installations. In all probability a saving of 25 to 26 per cent of the total water requirements would be procured under such conditions.

An analysis of the results obtained by using the boiler feed water heater in these tests shows the following savings: The average daily water consumption of this well was 1,280 bbls. per day for steam purposes. After the installation of the heater, the water consumption was reduced 282 bbls. per day. This saving is sufficient to supply an additional well with water for every five wells in operation. Assuming the cost of water per drilling well to be $25 per day, this would mean a saving of $5 a day or, based on 125 days' actual drilling time, a saving of $625 per well. The average gas consumption of this well was approximately 760,000 feet per day. A saving of 9.7 per cent in fuel based on a cost of 10 cents per 1,000 would amount to a saving of $7.37 per day, or based on a drilling time of 125 days the saving would amount to $921. The gross saving in fuel and water per well would be approximately $1,546.

VARIOUS PRESSURES DEFINED

Please explain the meaning of rock pressure. What distinction is made between rock pressure, gas pressure and hydrostatic pressure? From what is the term "rock pressure" derived? Is rock pressure relative or according to the depth of the well?—C. C. R.

The terms "rock pressure," "gas pressure" and "hydrostatic pressure" have been used in some cases to mean the same thing, but this is not strictly correct. "Bottom hole pressure" and "casinghead pressure" might be added to this list, for they also are confused sometimes.

Dorsey Hager, in his book, "Practical Oil Geology," notes that "rock pressure" sometimes is used to refer to gas pressure, and he does not think this is correct. He explains that rock pressure is due to forces set up where the earth's strata are thrown into folds. These folds are under compression due to gravitative influences or due to the weight of the overlying formations. This is truly rock pressure and is something that cannot be definitely measured, but it may be checked as to direction in which the forces act and the resultant of such forces may be computed. From such data it is possible to determine conditions underground that might tend to collapse casing in the hole.

Gas pressure may be measured at the bottom or top of the hole. The term indicates the pressure under which gas in a structure is compressed. If taken at the top of the hole the weight of the column of fluid or of fluid and gas in the hole must be calculated to determine the gas pressure at the bottom of the hole.

Hydrostatic pressure is developed within the porous rock directly in proportion to the depth of the superimposed column of fluid. In some instances it is found that the closed-in pressure of the well increases with the depth and is proportional to the vertical depth below the outcrops of the strata in which the accumulations have occurred. Where this is established as true, it is possible to determine approximately the bottom hole pressure of the well.

Bottom hole pressures are now being ascertained by the use of special instruments that are run into the well and record the pressure at the bottom or at any point between top and the bottom. These instruments have been described in The Oil and Gas Journal recently.

Casinghead pressures are obtained at the well head and registered on gauges and represent the amount of energy contained in the well's oil and gas production after it has been lifted to the surface.

WHY WAS IT CALLED THAT?

DUMP

The first shipments of oil down Oil Creek and the Allegheny River in Pennsylvania were by bulk boats, to which the oil would be hauled from various wells, bought by the boat owners and dumped into the boats. Dump tanks, erected along the creek were the next step in this method of transporting petroleum. Oil could be brought to them at any time, bought by the owners of the tanks and held to await the arrival of a boat customer. The name "dump" soon came to be applied to these tanks. The owners of them might be called the first oil brokers. They made the price of oil each day.

DIFFERENCE IN EXPLOSIVES

What is the difference, please, between liquid nitroglycerin and solidified nitroglycerin? Are both used in shooting oil wells? Is their action the same and is one as good as the other in the ordinary uses of the oil field? I would like to know more about the specific qualities of these explosives.—N. E. E.

Solidified nitroglycerin is made up of just enough collodion guncotton (nitrocellulose) dissolved in liquid nitroglycerin, to cause the liquid to gelatinize and form a plastic, somewhat spongy solid. Because of the mixing of the two materials, the product is somewhat changed in character, for while either the liquid nitroglycerin or dry guncotton is among the most dangerously sensitive explosives known, the gelatinized product of their mixture forms a relatively safe commercial explosive, much less hazardous to use than liquid nitroglycerin.

While if exploded under atmospheric pressure (with a suitable detonator), it has the same rate of detonation as the liquid nitroglycerin, that rate of detonation, results in the field indicate, can be controlled within certain limitations, so that the force of the explosion strikes the kind of blow best suited to give desired results in a given structure. This fact, Paul F. Lewis, expert in explosives, says, should not be construed as indicating that solidified nitroglycerin should be used to replace liquid nitroglycerin under all conditions. Each of these explosives has its own peculiar characteristics and definite field of usefulness whereby one is better suited to certain conditions than the other, as for instance in sections where there is considerable height of pay horizon and the formation requires or will stand only a light blow and where of necessity a long shell of 1¾ to 3 inches diameter would be required. In this case only liquid nitroglycerin would be practical, for the use of solidified nitroglycerin in shells of less than 3½ inches diameter is not recommended. To use solidified nitroglycerin in shells of less than 3½ inches diameter "sweetened" with liquid nitroglycerin would not be considered good practice as such "sweetening" would tend to defeat the very purpose for which the solidified explosive is used.

Also in cases where the hydrostatic pressure would equal or exceed the pressure of 1,000 feet of inert water tamping, it would be unwise to use the solidified explosive.

A peculiarity of solidified nitroglycerin is that it is compressible and that it tends to deteriorate in crude oil and that its sensitiveness to propagation is therefore almost directly proportional to its density and duration of immersion in oil. Experiments and results in every-day practice seem to indicate that this type of explosive can be compressed to the point where it cannot be detonated and that its rate of detonation is influenced by compression, to give a variable rate of detonation ranging from 8,000 to 23,600 feet per second. It would seem to follow then that if we compress it appreciably, a slower rate of detonation must result. It again follows that when placed in a bore hole with only a few feet of fluid on it, there is little compression.

Consequently a high rate of detonation with intense local effect will result as would be the case with the liquid explosive, whereas if there be, let us say, 1,000 feet of fluid on it, the pressure will be so great as to nearly completely desensitize it, effecting its rate of detonation as well as its detonating ability.

Technical Questions Answered

BY CHARLES K. FRANCIS, PH.D., TECHNICAL EDITOR

This department of The Oil and Gas Journal is devoted to the manufacturing branches of the oil industry.

Those connected with the refining of crude petroleum, the manufacture of natural gasoline and closely allied industries are invited to submit their problems to Dr. C. K. Francis, technical editor. The department was created for the purpose of aiding managers, superintendents, engineers, chemists and all those engaged in the various phases of plant operation; also those connected with the marketing and utilization of petroleum products.

Questions should be submitted in as much detail as possible so as to assure a satisfactory answer.

All inquiries should be signed and if other than the given initials are to be used please indicate the desired letters.

Questions involving patented processes, intricate formulas and calculations and estimates of costs, for obvious reasons, cannot be answered. The replies will appear on this page within a reasonable time.

REACTIONS WHEN SWEETENING WITH DOCTOR SOLUTION

Would you kindly give me a simple explanation of what takes place when sweetening with the doctor treatment?—C. E. G.

The complicated reactions of the doctor process for refining petroleum distillates have been reviewed and the facts as brought out by the early students, confirmed by additional experiments by Arthur Lachman, reported in Ind. Eng. Chem., 23, 354, 1931. The following is based on this article:

The litharge present promptly changes to lead sulphide which then acts in a variety of ways. The lead sulphide itself adsorbs mercaptans and is partly or wholly reconverted into sodium plumbite by the action of the air used for blowing. Finally, the alkaline solution of mercaptans is directly oxidized by atmospheric oxygen. The normal operation yields sodium sulphide, and this also is altered by aeration, being converted in the end into sodium thiosulphate. All of these various reactions occur simultaneously, each at the rate determined by the concentrations of the substances involved.

It is customary to agitate the mixture of distillate and doctor solution with air but it is important that this air be admitted into the mixture in a very finely divided form. The quantity of sodium sulphide in the alkaline mixture containing suspended lead sulphide should be kept at a minimum, and for this reason any hydrogen sulphide should be removed by means of a caustic wash before sweetening. The sodium sulphide content of spent doctor sludge is destroyed by air blowing. The addition of sulphur should be on a quantitative basis, determined from analytical estimation of mercaptans present. When this information is available, the calculated quantity of finely divided sulphur may be admitted at one time. This practice would insure oversulphurizing, which is common both in batch and continuous systems. A method for removing any excess of dissolved sulphur is desired but a quantitative control will eliminate this need.

PRESSURE AND WEIGHT OF GASOLINE HYDROCARBONS

What is the pressure of petrol vapors at different temperatures and specific gravity? Also, weight of 1 cubic foot of the same?—S. S.

The pressure that may be formed from gasoline vapors is a matter of composition and temperature. The only hydrocarbons which may form objectionable pressures, resulting in vapor lock in the automobile, are propane, butane and pentane. The table following gives the pressure of these hydrocarbons at several different temperatures:

PRESSURE FORMING HYDROCARBONS IN GASOLINE

	Density of liquid		Pressure lbs./sq. in. at			
	Sp. gr.	A.P.I.	60° F.	80° F.	100° F.	120° F.
Propane	0.5853	146.3	92.4	128.1	172	225
Butane	.5845	110.6	11.6	22.9	37.5	56.1
Pentane	.6312	92.7	*16	*8.6	0.9	7.5

*Vacuum inches of mercury.

The data are from the table published in The Oil and Gas Journal, July 23, 1931, p. 102.

There can be very little propane in the average refinery gasoline, because the character of the usual crude oil is such that no propane is to be obtained by the common methods of distillation, and the condensing conditions are not favorable for collecting it.

Propane finds its way into gasoline, as marketed, from the natural gasoline used for blending, but the natural gasoline operator is rapidly adjusting the extraction methods to so stabilize the final product that it may be obtained practically propane free. Small quantities of butane and pentane are required if the gasoline is to possess satisfactory starting qualities.

G. G. Oberfell, discussing the subject of vapor lock, The Oil and Gas Journal, July 2, 1931, page 16, gives several tables showing pressure properties, one of which is reproduced.

PROPERTIES OF VOLATILE FRACTIONS OF MOTOR FUEL

Fraction—	Sp. gr.	Theoretical vapor pressure at 100° F. (lbs./sq. in. abs.)	Increase in Reid vapor pressure due to presence of 1% by vol. (lbs./sq. in. @ 100° F.)	Percentage present in average motor fuel by vol.	Lowest easy starting temp. ° F.	Octane number	Percentage that can be included in 12-lb. R.V.P. motor fuel if fractions more volatile are absent
Propane	.509	187	2.46	0.3	—137	(*)	...
Iso-butane	.564	72.9	...	...	—100	100	...
N-butane	.584	52.4	...	...	—32	90	...
Butanes	.581	55.7	0.6	4.7	—90	93	14.2
Iso-pentane	.625	20.4	...	...	—49	91	...
N-pentane	.631	15.6	...	...	—37	64	...
Pentanes	.628	16.5	0.13	9.4	—45	74	51
N-hexane	.663	4.9	(†)	...	+7	‡35	100
Hexanes	.669	8.3	(†)	12.1	—20	63	100
N-heptane	.688	1.6	(†)	...	+44	0	100
Heptanes	.724	2.9	(†)	13.0	+22	65	100

*Considerably better than iso-butane. †Negligible. ‡Estimated.

From this table it appears that the average gasoline used as motor fuel contains 0.3 per cent propane, 4.7 per cent butanes and 9.4 per cent pentanes.

The vapor pressure at 100° F. of gasoline now marketed in the United States varies between 6 and 12 pounds.

The weight, pounds per cubic foot, is: Propane, 0.1196; butane, 0.1506, and pentane, 0.1907. Additional data may be obtained from the table mentioned, published July 23, 1931.

TIME FACTOR WHEN CRACKING

I am told that the rate of cracking is doubled for each 20°, approximate, increase in temperature. Is this based on actual tests or is it a figure calculated from chemical reactions? If you will explain this and refer me to any real tests that have been made along this line it will be appreciated.—D. S. G.

It is quite generally true that the speed of a chemical reaction is doubled for each 10° C. rise in temperature; this is equivalent to 18° F. Sachanen and Tilitscheyew have reported experiments in the cracking of petroleum from Grosny, in The Oil and Gas Journal, June 23, 1927, page 144. The velocity of cracking as influenced by temperature was one of the factors investigated.

"As the cracking temperature measured was reached after a certain period of preliminary heating and as the cooling of the equipment required a certain period of time, necessary correction factors were introduced. If, for instance, the cracking temperature at 797° F. for a period of 30 minutes was investigated, the preheating period from 707° to 797° F. was 15 minutes, and the cooling from 797° to 707° took eight minutes. The corrections were calculated in the following manner: As the average temperature of the preheating and cooling is 752° F., and the time is 23 minutes, we must take into account besides the cracking at 797° F., the cracking occurring at 752° F. in a period of 30 minutes. As is shown below the velocity of cracking at 797° F. is about six times greater than at 752° F.; thus the time of cracking at 797° F. is increased by 23/6, or about four minutes, which allows for the preheating and cooling period that must be added to the time of the principal cracking process. In this way the correct time of cracking at 797° F. would be calculated as the sum of 30 and 4, or 34 minutes. The time of preheating and cooling below 707° F. is neglected as cracking has no measurable velocity at these temperatures.

"The time necessary for the limiting output of cracked product (65 per cent, gasoline and kerosene) depends to a very large degree on the temperature of the process. From the above mentioned experiments we obtained the following:

Temperature of cracking °C.	°F.	Time to reach limiting output of cracked products
375	707	45 hours
400	752	9 hours
425	797	1.5 hours
450	842	12 minutes
475	887	2 minutes
500	932	20 seconds

As these figures show, the velocity of cracking increases 5 or 6 fold for every 45° F., as is the case with other chemical reactions, which double for each 10° C. or 18° F.

OCTANE NUMBER GASOLINE FROM SMACKOVER CRUDE

What is the natural octane number of the gasoline from an asphalt base oil such as is produced in the Smackover district of Arkansas, both straightrun and cracked? What is the distilling range and other tests of this grade of gasoline?—E. H. A.

The importance of the source of petroleum as influencing the quality of the gasoline that may be made from it is generally acknowledged. Additional emphasis has been directed to the chemical composition of the crude oil since attention was called to the great difference in the knock rating of gasoline as made from crude oil obtained in the various fields and consequently of different composition. The Smackover oil of Arkansas is exceptionally strong in antiknock substances.

The data available represent analyses of the straightrun gasoline and the cracked gasoline made from the heavy grade, 19/21 A.P.I. gravity.

GASOLINE FROM SMACKOVER CRUDE OIL

Kind of gasoline:	Straight-run	From pressure distillate
Gravity A.P.I.	47.0	55.4
Distillation:		
Initial	164° F.	114° F.
10%	238	179
20%	263	212
50%	320	293
90%	381	386
Endpoint	420	422
Recovery	98%	97%
Octane number	74	63
Doctor and corrosion	Neg.	Neg.
Sulphur	0.047	0.12

These products are blended and sufficient natural gasoline added to bring the gasoline to specifications approximately those of U. S. Motor Gasoline. The correction of each is shown in the table.

FINAL BLENDS OF SMACKOVER GASOLINE

	Straight-run	From pressure distillate
Gravity A.P.I.	59.5	59.4
Initial	95° F.	100° F.
10%	144	157
20%	174	180
50%	254	276
Endpoint	369	380
Recovery	97%	97.5%
Octane number	70	61
Doctor and corrosion	Neg.	Neg.
Sulphur	0.035	0.095

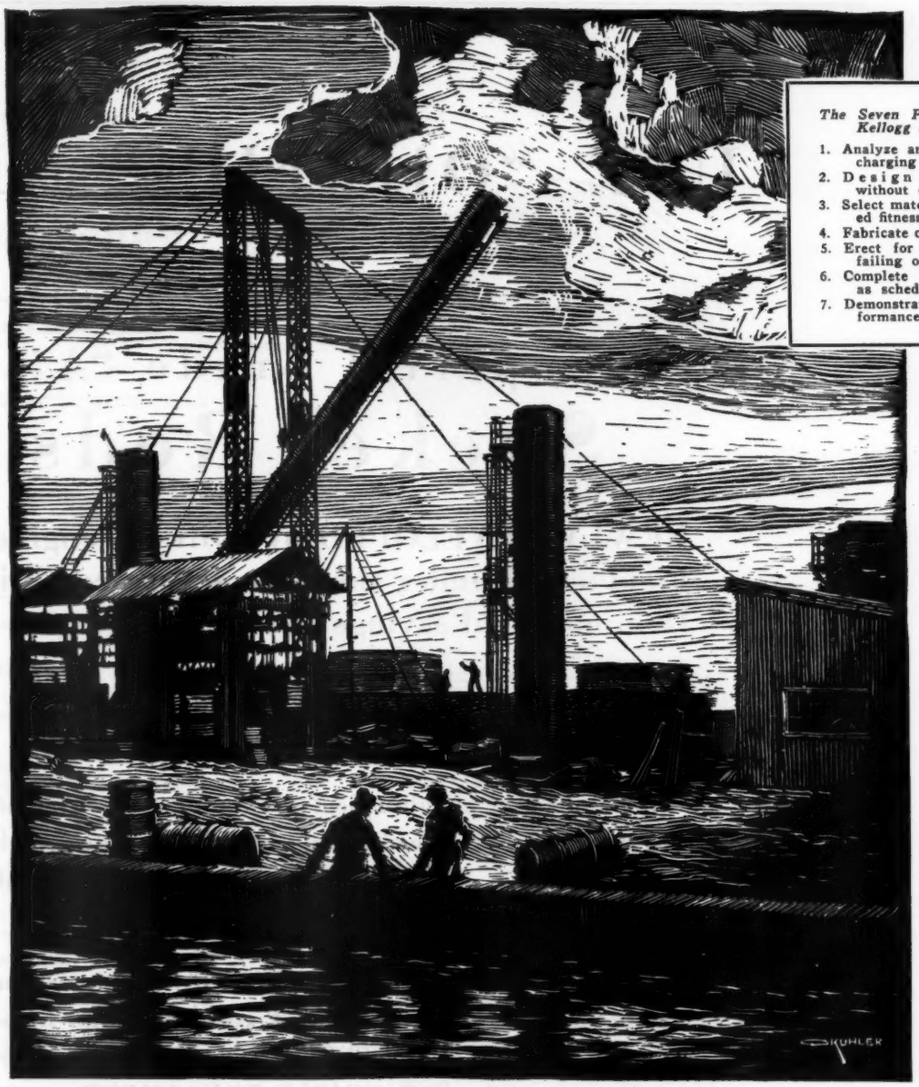
The gasoline as marketed usually contains: Naphtha, 22 per cent; cracked gasoline, 58 per cent, and natural gasoline, 20 per cent, the octane number being 70 or better.

STANDARD LUBRICATING OIL BOTTLES

Can you furnish information including specifications which apply to the bottles used when selling lubricating oil at service stations?—S. A.

The Bureau of Standards, through the Division of Weights and Measures, specifies the type and size of the bottles to be used for the sale of lubricating oils for immediate delivery to the crankcase. These specifications may be outlined as follows: The bottles shall be of clear, uncolored glass made to contain the indicated quantity at 68° F., marked on the side, and the manufacturer shall be identified by name or symbol shown on the bottom. The bottle shall be provided with a line indicating the capacity with at least 3 cubic inches free space above this line between any metal top or spout. Unobstructed drainage must be provided. Tolerances shall be in excess only, that is no deficiency is allowed.

These specifications, effective January 1, 1932, were given in more detail in The Oil and Gas Journal, July 23, 1931, page 95.



The Seven Principles of Kellogg Service

1. Analyze and know the charging stock.
2. Design for capacity without overloading.
3. Select materials of tested fitness.
4. Fabricate only the best.
5. Erect for steady, unfailing operation.
6. Complete construction as scheduled.
7. Demonstrate plant performance.

Construction of two 2,500 bbl. pipe stills in Patagonia for breaking the viscosity of topped Comodoro Rivadavia crude.

"Analyze and know the charging stock"

. . . *the first principle of Kellogg Service*

Of fundamental importance in refinery design is an understanding of the stock to be handled. A study of the charge by technologists in Kellogg's laboratory-refinery is the first step in the development of every Kellogg refinery design.

The M. W. KELLOGG CO., *225 Broadway, New York*

LOS ANGELES, CAL., 1031 SOUTH BROADWAY TULSA, OKLA., PHILTOWER BUILDING

Kellog products include Cross, Holmes-Manley, and de Florez cracking units; de Florez furnaces and temperature control apparatus; pipe stills; Pacific Centrifugal Pumps; absorption, stabilization, and treating plants; Masterweld pressure vessels; complete refinery and power plant piping.

REDUCE YOUR

USE "Oilwell's" NEW

Triple Treatment

Imperial Grade "A"

Sucker Rods

NEWLY DEVELOPED by "Oilwell" engineers. Field tested under the most severe conditions. Demonstrated savings by:

1. **Minimizing breakages.**
2. **Guaranteeing long continuous runs.**
3. **Reducing lease labor costs.**

The combined metallurgical and manufacturing facilities of U. S. Steel provide: a new rod, a thoroughly scientific Heat Treatment, a new standard of quality heretofore unknown in Sucker Rod manufacture.

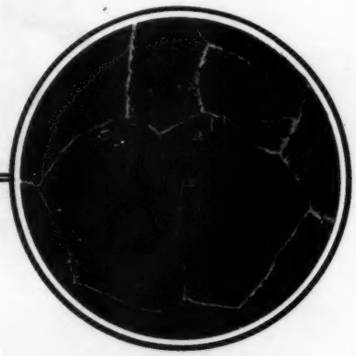
"Oilwell's" *TRIPLE TREATMENT* is to be compared only with the most exacting Heat Treatment found in producing the best TOOL STEELS. Normalizing alone is *not* sufficient. "Oilwell's" *TRIPLE TREATMENT* provides two additional refinements—a special "quenching" and a long, tedious "temper drawing"—to secure a metal grain structure with proper Hardness, maximum Strength, greatest possible Toughness and Ductility throughout the entire length of the rod.

Come to

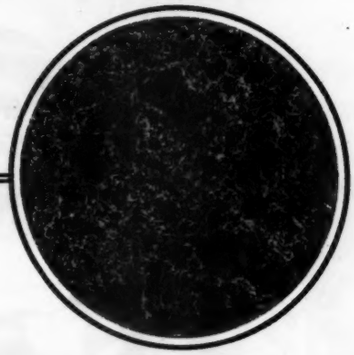
LIFTING COSTS

Under The Microscope

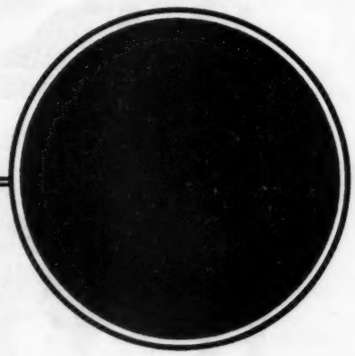
Looks Like This As "Forged"



And--Like This With Only A "Normalizing" Treatment



But--Imperial Grade "A" Looks Like This After Oilwell's *"Triple Treatment"*

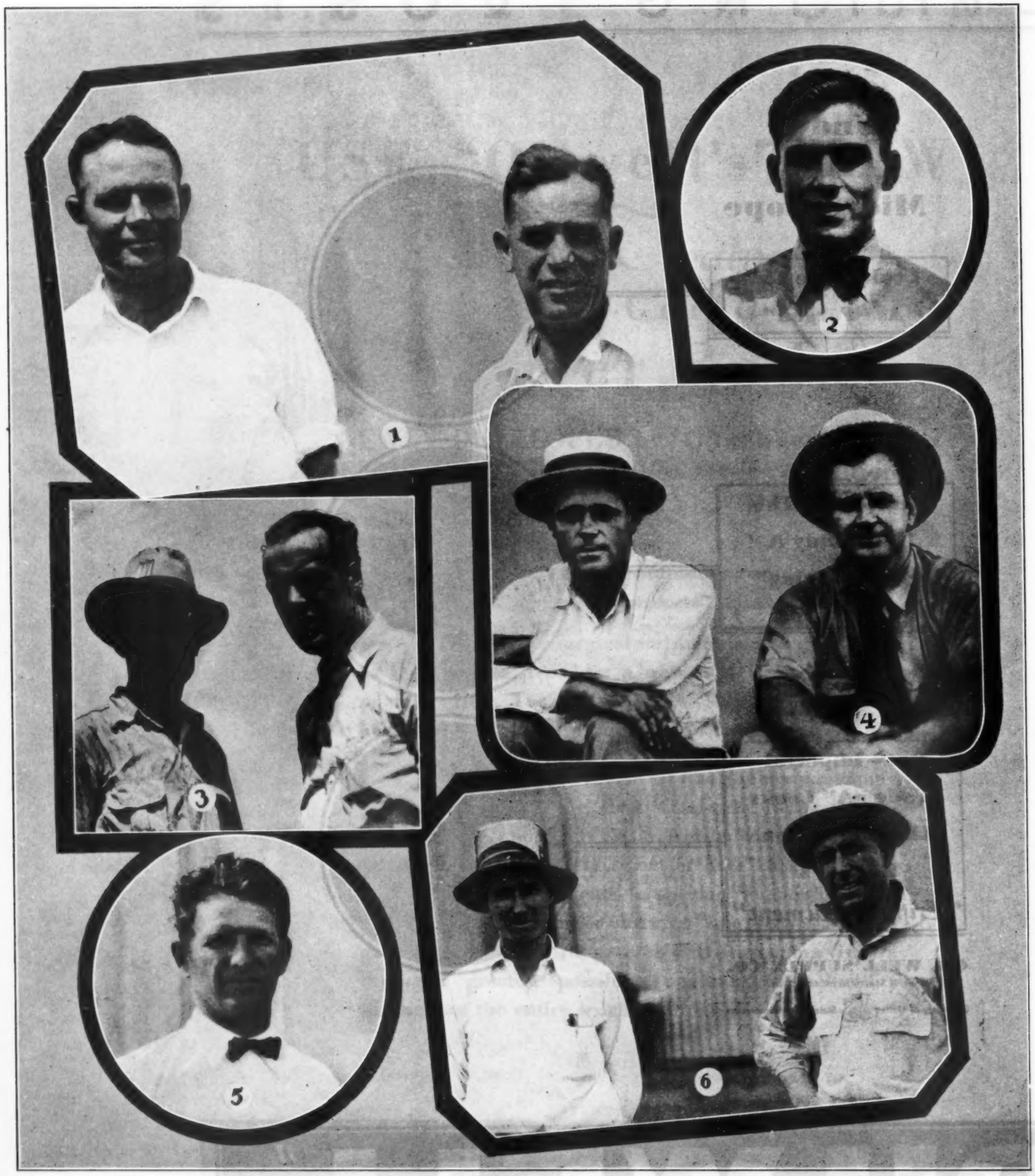


OIL WELL SUPPLY CO.
Branch Stores in all Oil Fields
Subsidiary of United States Steel Corporation

1691

"OILWELL"

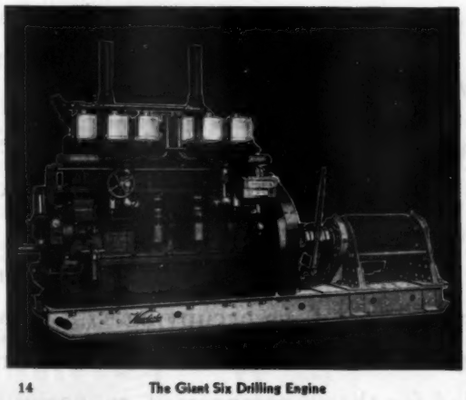
East Texas Activity Keeps These Field Men Busy



1—H. R. Knauth, general foreman, and O. R. Tisdale, district engineer, Tidal Refining Company, pipe line department, Joiner Field, Texas. 2—J. E. Harrell, East Texas representative, Lee C. Moore & Company, Inc. 3—J. W. Wallace, foreman, Oklahoma Contracting Company; and V. O. Green, Resistcor Engineering Corporation. 4—J. F. Buford, district manager, and A. D. Johnson, salesman, Smith Separator Company, East Texas Field. 5—Leo Herr, chief engineer, Sinclair Texas Pipe Line Company, Pershing, Okla. 6—Yates Hunt, production superintendent, and T. H. Crow, warehouse man, H. L. Hunt properties, Turner Town, Tex.

On the job

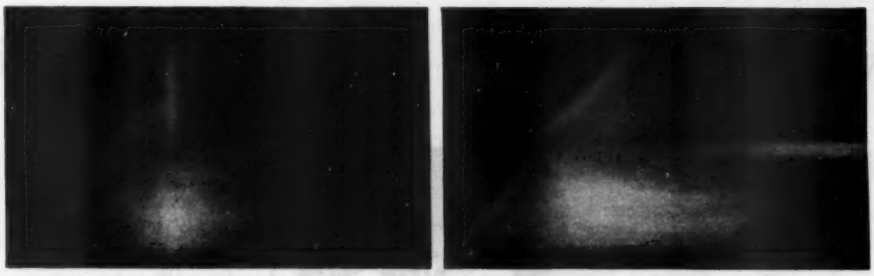
IT'S REAL HORSEPOWER
NOT *PAPER HORSEPOWER*



14 The Giant Six Drilling Engine

Where there's a big job... with real work to be done... paper horsepower produces exactly nothing. Paper horsepower is over rating. The widespread use of Waukesha Engines is due to their conservative ratings. They deliver real horsepower... easily ...day in and day out. Booklet 827 shows their many uses—15 hp. to over 300 hp. Write for it. Waukesha Motor Company, Waukesha, Wisconsin.

WAUKESHA ENGINES



At the left is a photograph of combustion where knock occurs; at the right, a photograph of combustion where flame-front spreads smoothly. These photographs, made through a quartz window in a cylinder head, are continuous exposures on a moving film; hence the top line indicates the edge of the flame as it progressed from the spark-plug. The distance laterally is the time elapsing, and the light area below shows the after-glow. The slant of the top line, therefore, represents the speed of flame-front travel. When knock occurs, this is practically vertical, representing almost instantaneous combustion of a portion of the charge.

1/112 OF A SECOND

is a long... long... time!

AT 750 revolutions per minute, gasoline combustion takes place in approximately 1/112th of a second.

Yet knock testing engines prove that when this combustion is accelerated to the point of almost instantaneous explosion, the energy generated is much less efficient. Can there be so much difference between 1/112th of a second and instantaneous action? There can be. There is.

During 1/112th of a second at 750 r. p. m. the piston moves through *40 degrees* of crankshaft rotation. This is a long time in the cycle of an engine. It is perhaps a thousand times longer than the period during which detonation occurs.

Of course, knock does not usually occur until a large portion of the charge has burned at the normal rate of speed. Therefore, a fuel to operate an engine without the power-loss and harmful effects of knocking must be of sufficiently high quality to resist the strain of the peak pressure of normal combustion in that engine.

What causes knock

To illustrate this, let us consider the process of combustion in an engine of conventional design. Figure A represents a combustion chamber of rectangular cross section, containing a mixture of air and fuel which is divided for the purpose of the illustration into ten equal parts. When this charge is fired by the spark-plug, that portion which surrounds the plug is first to be burned. As it burns, the temperature, volume and pressure increase, thereby compressing the unburned portion of the charge, as shown in figure B.

As the burning spreads, both the burned and the unburned portions of the charge are subject to steadily increasing pressure and each additional fraction of charge that burns contributes to the total pressure. This continues, as illustrated in figures C and D, until the last portion of the unburned charge, which we originally took as occupying 1/10th of the volume of the combustion space, is compressed to occupy approximately 1/30th. At the same time, the surrounding temperatures have been greatly increased; particularly if carbon formations are present, since they retain heat from previous combustion, thereby

contributing enormously to the temperature.

Fuel must withstand *this* condition to operate without knock.

Critical point

If the temperature and pressure of the highly compressed last portion of the charge to be burned exceeds the critical value for that fuel, detonation results. Such a critical condition is inherent in any given fuel, and may result in detonation at any time between the firing of the spark-plug and the time the last increment of the fuel has been burned.

The sooner the detonation takes place, the greater the violence of the knock and the greater the loss in power to the motor; but a fuel that detonates even near the end of combustion causes rough operation and overheating that result in substantial performance losses.

Added power

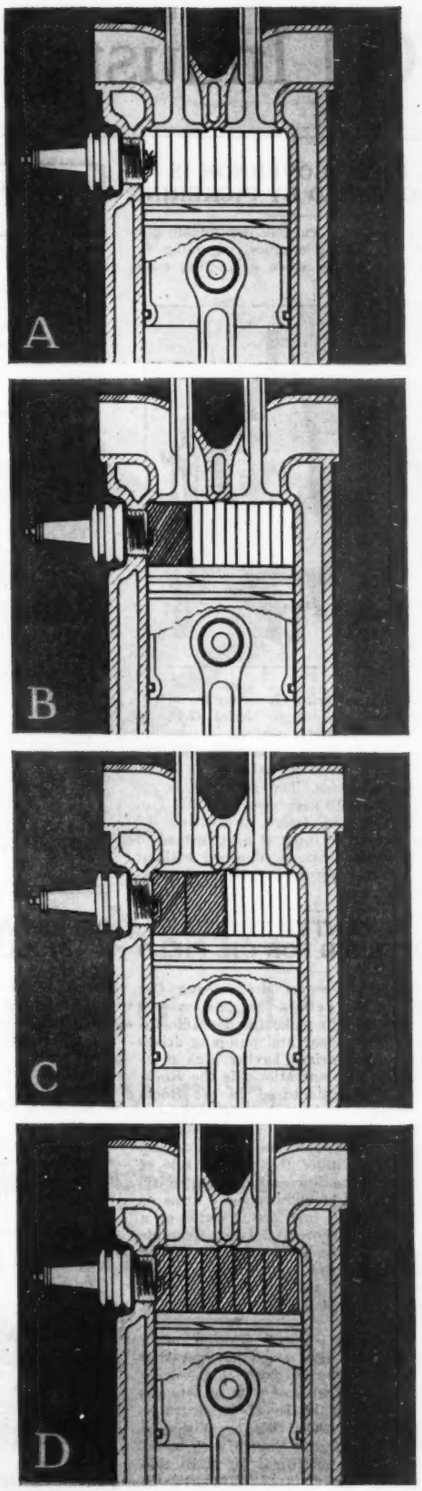
Only after a motor has supplied the power necessary to overcome all operating and friction losses is power available for motivation; and only after the motor supplies all motivating power for whatever speed the car is traveling is any power available for acceleration or hill climbing.

It is power over and above ordinary needs that brings outstanding performance. Manufacturers who design motors to take advantage of the anti-knock qualities of Ethyl Gasoline are free to use the higher compression pressures which develop this added power—and incur no penalties of increased manufacturing costs or increased weight.

Permissible compression

The minimum standard of all Ethyl Gasoline is sufficiently high in anti-knock quality to avoid detonation in motors that develop compression pressures considerably higher than the present average of 95 pounds.

The desired fuel is here, and thoroughly distributed, for those who wish to take advantage of the increased performance of higher compression. How will your product compare with the competitive performance of next year? Our engineers will be glad to work with you. Ethyl Gasoline Corporation, Chrysler Building, New York City.



These four figures represent the progress of combustion in an engine of conventional design and illustrate how burned gases increase the pressure before the combustion of unburned portions. A similar increase in temperature inside the cylinder is also taking place between the time the charge is ignited and the time the last portion is burned.

ETHYL
ETHYL GASOLINE CORPORATION
Controls Combustion

GOOD GASOLINE + ETHYL FLUID = ETHYL GASOLINE

The active ingredient used in Ethyl fluid is lead

More than 250,000 pumps now bear the Ethyl emblem.

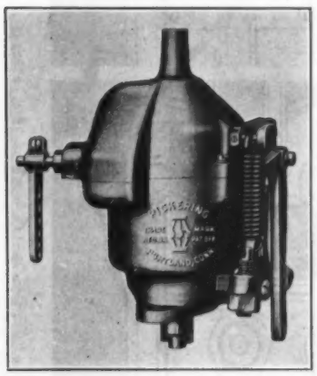
© E.G.C. 1931

ETHYL GASOLINE

Oil Industry Equipment and Supplies

OIL FIELD GOVERNOR IS OFFERED BY PICKERING

The need of a rugged, dependable governor for drilling engines, providing for quick opening up when extracting tools,



induced the Pickering Governor Co., Portland, Conn., to design Model G.P. especially for oil field service.

The Model G.P. is said to combine quick action with the ability to stand long, hard service. The governor is entirely enclosed to keep dust and grit out. It is compact in design, presenting the appearance of an integral part instead of an accessory. It can be obtained without remote control feature, for constant speed conditions.

SHORT-CENTER DRIVE IS OFFERED FOR OIL FIELD

A new short-center drive using flat belting and flat pulleys that has features which are said to make it adaptable for standard compressor and pumping drives as well as for drives having high overloads on drilling operations, is the Rockwood drive manufactured by the Rockwood Manufacturing Co., Indianapolis, Ind. The drive consists of a Rockwood base, one or two paper motor pulleys, and a special waterproof flat leather belt of uniform construction and high capacity.

The motor is mounted on two arms or brackets which in turn are mounted on a pivoted shaft anchored on two adjustable screws in the base. Part of the weight of the motor is utilized to maintain a, prescribed tension in the belt. Thus the tension is maintained uniform and constant at all speeds.

As the coefficient of friction of a leather belt of high capacity operating over a paper pulley is very high the drive operates with a ratio of 9 to 1 between tight and loose side. In all band transmission, with either flat or V-shaped belts, the belt lengths change with speed changes due to centrifugal force. In this drive the center distance automatically changes with the changing belt lengths, so the tension in the belt is always uniform.

Each drive is designed to have an overload capacity of 150 per cent of the motor rating for standard drives and for heavy-duty drives in field work the overload capacities are much higher. As the action of the motor on the pivoted base automatically takes up all belt stretch, the belt need not be touched after it is installed and does not have to be cut or shortened. In buying leather belting the belt can be made endless, doing away with bolts and metal fastened ends. The center distance can be as short as may be desired just as long as the arc of contact on the small pulley is not less than 130 degrees.

NOTES ABOUT TRADE LITERATURE

Literature of interest to the oil industry recently distributed by the General Electric Co. includes a comprehensive industrial control catalog of 196 pages; "Capacitors for Power-factor Correction," 20 pages, and 17 bulletins to be substituted for others kept on file in many offices.

Many persons will preserve the Armco engineering bulletin, "Designing Pipe Lines for Pressure," prepared by the American Rolling Mill Co., Middletown, Ohio, and available for any who write for it.

The Kirk-Morrow Iron Works Co., Iola, Kans., is distributing a four-page bulletin describing its new drilling and pumping unit.

The National Transit Pump & Machine Co., Oil City, Pa., is mailing a 30-page bulletin of convenient size devoted to Transit (Curtis) rotary pumps. Useful tables and other engineering data are appended.

Bulletin 81, issued by the Lufkin Foundry & Machine Co., Lufkin, Tex., gives detailed information regarding the Lufkin universal geared rig front for cable-tool drilling and pumping.

The Ludlow Valve Manufacturing Co., Troy, N. Y., is sending out a bulletin illustrating and explaining the principle of the Ludlow multivalve.

"Helpful Ideas for Engineers" is the title of a 32-page booklet published by the Smooth-On Manufacturing Co., 568 Communipaw Avenue, Jersey City, N. J., and containing directions for stopping leaks of all sorts. It may be obtained on request.

A four-page bulletin issued by Gaserver, 333 North Michigan Avenue, Chicago, tells about the new method of merchandising gasoline and oil direct to the motorist through operating a gasoline station on wheels.

Bulletins being sent out by the Mine Safety Appliances Co., Pittsburgh, Pa., describe the McCaa two-hour and half-hour oxygen breathing apparatus for use wherever dangerous quantities of gas or deficiencies of oxygen exist.

Paul Arbon & Co., 214 East Brady Stret, Tulsa, have issued a four-page bulletin on Series 20C and Series 30C hoists for use with the Caterpillar tractor in many oil field operations.

An attractive 12-page folder has been issued by the Brown Instrument Co., Philadelphia, Pa., showing in tabloid form the principal features of the new Brown potentiometer pyrometer.

OFFERS NEW UNIT FOR DRILLING AND PUMPING

To meet the growing need for economy and increased efficiency in all producing operations, the Kirk-Morrow Iron Works Co. of Iola, Kans., announces that it has developed a combination drilling and pumping unit, now being placed on the market.

Strength and efficiency in operation are the major features of this new equipment. All parts are easily accessible and possess individual features worthy of note. The chain drive is unusually efficient in the transmission of power and at the same time is sufficiently flexible to absorb stress in shock loads. Jack

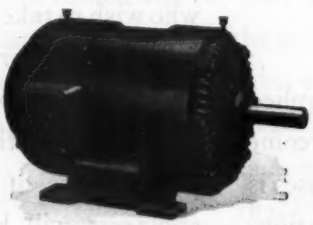
posts are extra heavy. Bearings are oversize and the sprocket wheel and tug wheel are specially constructed. These elements of construction adapt the Kirk-Morrow drilling and pumping unit for work of the heaviest kind. The unit is offered in two types, Type A and Type B, having 6-inch and 7½-inch diameter crankshafts, respectively. Both may be operated with gas, oil and steam engines, or with an electric motor.

The Kirk-Morrow Iron Works Co. has prepared a folder on this equipment which will be sent to those who ask for it.

The Dallas, Tex., branch store of the Refinery Supply Co., Tulsa, has been moved from 3404-6 Main Street to 623 Santa Fe Building.

ALLIS-CHALMERS OFFERS EXPLOSION-PROOF MOTOR

The Allis-Chalmers Manufacturing Co., Milwaukee, Wis., has developed a new line of explosion-proof motors approved for use in hazardous atmospheres such



as are encountered in oil refineries, gasoline plants, etc. These motors have been tested and approved by the Underwriters' Laboratories and carry the laboratory label.

The construction of the motor is along the general lines of the Allis-Chalmers totally enclosed, fan-cooled motor, having the same simple design, with all parts readily accessible. Its special features include extra long bearing seals to prevent the escapement of flame and to cool the gases below the point of ignition, special alloy steel cap screws that fit into tapped pockets, and unusual sturdiness to safely resist stresses due to possible internal explosions or flashes. In addition to the sealed motor leads, a special explosion-proof cast iron conduit box gives protection against possible contact with surrounding air.

Natural Gas Equipment, Inc., has announced the appointment of James C. McCluskey as sales manager, southern division, with headquarters in Los Angeles. Mr. McCluskey, who has been with the company for eight years, will have charge of sales in southern California, including the Kettleman Hills area.

MEN KNOWN *in* THE EQUIPMENT FIELD

Appointment of J. M. Hipple as general works manager for the Westinghouse Electric & Manufacturing Co. has

J. M. Hipple

been announced by J. S. Tritle, vice president and general manager.

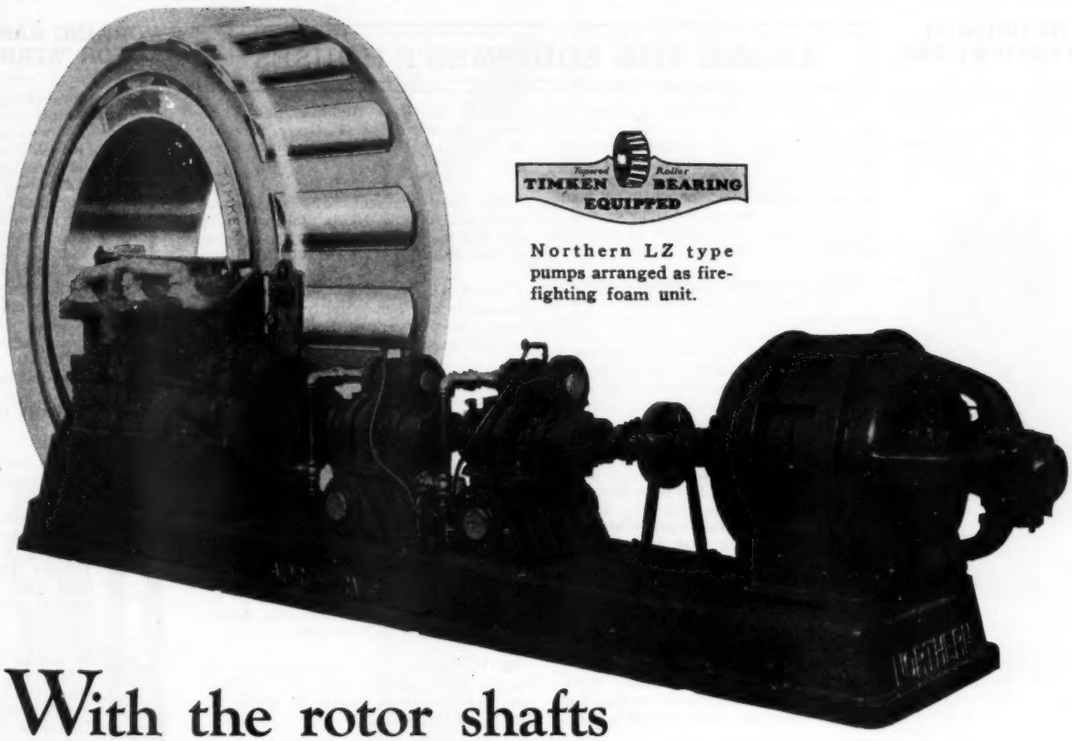
Mr. Hipple, works manager in East Pittsburgh, Pa., since September 1, 1927, is a native of Jefferson, Ohio. After graduating from Ohio State University in 1898 he joined the Westinghouse company and for one year was engaged in the testing department. He then was assigned to the engineering department. In 1911 he was made manager of the motor engineering department and headed this department until his appointment as works manager.

CHAIN BELT OFFERS PRIZES

The Chain Belt Co. is offering $500 in cash prizes to persons who send in the best articles and sketches for the use of chain and belt conveying or other Chain Belt products in existing plants. Articles must be on possible new installations or replacements of existing installations and must contain definite data on possible cost reductions, and be accompanied by rough sketch. The prizes are as follows: First $200, second $100, third $50, and 15 prizes of $10. The offer is open to everyone except employes or distributors of the Chain Belt Co. or their families. All entries must be received at the offices of the Chain Belt Co., 1600 West Bruce Street, Milwaukee, Wis., before 5 p.m. on September 21.

ALLBESTOS BRAKE LINING

The Allbestos Corp. is marketing on the Pacific Coast a new drawworks brake lining which is reported meeting with success in the oil fields of California. This brake lining is of 12-ply construction, 55 picks to the inch, each ply tying itself in with the next ply, and thus eliminating the use of binders. The long fiber asbestos yarn is of three-ply construction, twisted and spun with four-ply wire to make a single strand. These strands are then woven into the finished product. Stocks are carried in Los Angeles at the company's warehouse and district headquarters, 216 North Alameda Street.



Northern LZ type pumps arranged as fire-fighting foam unit.

With the rotor shafts mounted on Timken Bearings, NORTHERN rotary pumps manufactured by the Northern Pump Company perform better, last longer and cost less for power, lubrication and maintenance.

There are 4 Timkens in each pump—2 on each rotor shaft. By holding the shafts in alignment and protecting them against radial-thrust loads, they maintain accurate meshing of the rotor cams, thus assuring full pumping efficiency and dependability under continuous hard usage.

You need the protection of Timken tapered construction, Timken positively aligned rolls and Timken-made steel in all of your drilling and pumping equipment. Most leading makes have it. Specify Timkens.

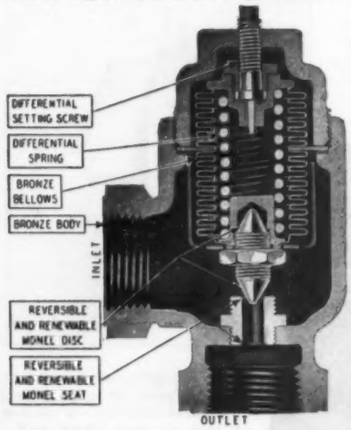
THE TIMKEN ROLLER BEARING COMPANY, CANTON, OHIO

TIMKEN *Tapered Roller* **BEARINGS**

Oil Industry Equipment and Supplies

STEAM TRAP OF UNUSUAL DESIGN OFFERED BY TAG

The C. J. Tagliabue Manufacturing Co. of Brooklyn, N. Y., maker of recording and controlling instruments, is now offering to industrial users a new steam trap with outstanding features. The differential setting feature makes it possible for



the trap to discharge condensate at a temperature corresponding to a uniform differential pressure from 0 to 20 pounds below the operating steam pressure. If the trap is set to discharge condensate at a temperature corresponding to as much as 20 pounds less than the operating steam pressure, it will discharge the condensate at this differential regardless of whether the steam pressure is 50 pounds, 75 pounds or 125 pounds, and without any further adjustment of the differential setting.

When the differential setting screw is all the way up on the trap, there is no tension on the spring and the trap will discharge condensate from 1° to 2° below the temperature of the operating steam. When tension on the spring is applied, by simply turning down the setting screw, a mechanical pressure is created on the inside of the skillfully designed bronze bellows which aids the vapor pressure developed in the bellows to close the valve. Thus the amount of mechanical pressure exerted by the spring determines whether the trap will close at the temperature of the operating steam or 5°, 15° or 25° below this temperature. And, in reverse effect, whether it will open to discharge condensate at 1° to 2° below the operating temperature of the steam or at 7°, 17° or 27° below that temperature.

Other features are reversible as well as renewable Monel seats and discs. Simply by unscrewing and reversing the seat the outlet end becomes a new seat. By inverting the disc, the reverse, extra disc is brought into play. A sturdy and compact, hand-sized bronze body is noted.

The Tagliabue company has concentrated on one size—1-inch only—as the full five-sixteenths-inch valve opening assures ample capacity and permits of easy interchangeability on every steam line. Thus only one set of replacement parts is required for any application within the capacity of the trap.

AMONG THE EQUIPMENT HOUSES

Net profit of $736,103 is shown by Hercules Powder Co. for the first six months of 1931. After payment of preferred dividends, this is equivalent to 55 cents per share on the 606,234 shares of no par common stock of which 52 cents was earned in the second quarter and 3 cents per share was earned in the first quarter.

Orders received by the General Electric Co. for the first six months of 1931 amounted to $141,428,978, compared with $190,313,758 for the corresponding period last year. Profit available for dividends on common stock for the first six months of 1931 was $21,523,722.88, or 75 cents a share, compared with $29,273,276.14, or $1.01 a share, for the first six months last year.

The Tidal Oil Co. manufacturing plant, Dawson Road, Tulsa, has been leased by the Franks Manufacturing Co., headed by H. H. Franks and Carl White, Jr. Mr. Franks for the past 12 years has been shops superintendent for the Tidal.

The Texas Contractors Supply Co., Waco, Tex., will represent the Gardner-Denver Co. on all rock drill products and portable compressors.

Spang, Chalfant & Co., Inc., Pittsburgh, Pa., manufacturer of welded and seamless steel pipe, has opened a sales office in the Russ Building, San Francisco, in charge of J. V. Greer, formerly in charge of the company's Birmingham sales office.

The Mid-Continent sales office and warehouse of the Byron Jackson Co.'s tool division has been moved from Tulsa to 2505 Boaz Street, Fort Worth, Tex.

The J. D. Brance Co., Houston, Tex., manufacturers' representative in the Gulf Coast, recently moved into new offices and warehouse at 902 St. Charles Street.

R. E. Ratcliffe, who has been representing the American Wire Fabrics Corp. and the Wickwire Spencer Sales Corp. in the Texas district, has been transferred to the district office in Tulsa, to take the place of Lawrence J. Baldwin, who resigned.

Net earnings of Arthur G. McKee & Co., consulting and contracting engineers, Cleveland, Ohio, for the first six months of 1931 were $355,415 after all charges, including reserves and Federal taxes at present rates. This compares with $292,810 for the first half of 1930.

R. E. Walker, sales representative of the American Rolling Mill Co., Middleton, Ohio, is again located in Tulsa at 738 Mayo Building.

WORKING BARREL MADE FOR "STRIPPER" WELLS

The Walter O'Bannon Co., Tulsa, has developed another new oil field appliance, a low-capacity insert working barrel. This working barrel is of the packed plunger type, has about one-third the capacity of a common working barrel, and by its use the producer can pump stripper wells more slowly, thus increasing the daily delivery.

The barrel may be seated in either a 2-inch or 2½-inch common barrel or in a cast iron liner barrel. It is not necessary to pull the tubing to run this barrel.

HIGH CARBON ELECTRODE

The difficulties usually met when welding high carbon electrodes, are said to have been eliminated by a special coating, announced from the research laboratories of the Lincoln Electric Co., Cleveland, Ohio, which has developed an electrode for building up worn steel wearing surfaces. This new electrode will be known commercially as "Hardweld," and it contains about 1 per cent carbon.

This electrode is designed for use in building up oil well drill bits, tractor shoes and other wearing surfaces. The weld produced has a tough dense surface of moderate hardness and will resist wear and abrasion. The special coating is said to eliminate the objectionable wildness of the arc, characteristic of ordinary high carbon welding wire; eliminate the boiling and resulting porosity usually present in high carbon deposit; regulate the analysis of the deposit by controlling oxidation and variations of the arc length.

BAILEY RATIO METER

A recent development of the Bailey Meter Co., Cleveland, Ohio, is the Bailey ratio meter for use as a combustion guide in the firing of gas or oil fired heaters, kilns and all types of industrial furnaces. The primary purposes of the ratio meter is to provide furnace operators with an easily understandable guide which will enable them to maintain a definite relation between the amounts of air and fuel supplied to the furnace so as to obtain high combustion efficiency.

BENDING SHIELD IS PERFECTED FOR HEATING LARGE PIPE ALONG THE LINE

The American Steel Works, Twenty-seventh Street and Southwest Boulevard, Kansas City, Mo., has perfected a bending shield for heating large pipe along the line. The shields are made in all sizes of pipe up to 26 inches. Shields in 24 and 26-inch sizes are 9 feet long and are constructed so as to form an extra large heating chamber alongside the pipe. Two large double-jetted torches firing from each end, circulate the heat the full length of the shield, heating the pipe evenly and preventing spot heats which would cause flat places and buckles in the pipe while being bended. Only 10 to 15 minutes is required for sufficient heat to make the bend.

Sled runners are welded to the large size shield so that it can be dragged along the line, which saves loading it into a truck each time a bend is made. The shield is made from one-piece steel with no welded seam and it is clamped to the side of the pipe with two load binders and heavy chain.

The compressor tank unit holds a complete drum of oil supply and is equipped with a gear-driven air compressor and a 1 horsepower gasoline engine. The tank also has an emergency hand-operated air pump in the rear. This unit is mounted on regular spring mounting steel chassis with 6-inch face roller bearing wheels. The chassis is so constructed with standards on each side that 10 or 12 can be carried along the line. The tray on top provides a safe carrying place for torch and hose while being patrolled along the line.

This compressor tank unit is a complete combination unit used either for the torches on the bending shield or for an outfit for spraying primer on the line.

STANDARD SALES AGREEMENT

Through the joint efforts of a committee from the gray iron industry and the iron and steel committee of the National Association of Purchasing Agents, a standard sales agreement and code of trade customs affecting the gray iron industry has been agreed upon. The code is being distributed in printed form and will be reported on at the national convention in Toronto. Many difficulties and misunderstandings which have come up in the purchase and sale of gray iron material are expected to be avoided and adjustments where necessary more easily made as a result of this agreement.

A COMPLETE LINE OF DRILLING, CORING AND REAMING TOOLS

Each Globe tool is designed especially to make straight, full-gauge hole, and make it fast. Each one is intended for use under certain specific conditions. The result is a complete line of fast digging tools adapted to all formations, with which operators can drill, core and ream faster, more efficiently and more economically under all field conditions.

1. Model 5 Drilling Bit. Sizes 3¾" to 10" inclusive.

2. Double 3-Point Reamer, Model M. All sizes.

3. H. C. Smith Rotary Underreamer: three-point reamer contact. Hydraulic trip control. Positive in operation. Smooth running. Sizes 3⅞" to 15½" inclusive.

4. Model M Rock Bit: with single Model M three-point reamer. Sizes 5⅝" to 25" inclusive.

5. Model "5" Reamer: used in combination with Model B-2 Drilling Bit. Sizes 7½" to 27" inclusive.

6. Model B-2 Drilling Bit. Sizes 10½" to 27" inclusive.

7. Globe Disc Bit: a smooth running, fast digging disc type bit for holes from 10⅝" to 28" inclusive.

8. H. C. Smith Coring Outfit, Types "B" and "C." Sizes: Type "B," 3⅜" to 30" inclusive; Type "C," 3⅜" to 14¾" inclusive.

9. Globe Type "G" Core Bit: a two-piece cutterhead. Sizes 7⅝" to 19".

10. Globe Type "H" Core Bit: a one-piece stepped cutterhead. Sizes 5⅝" to 19".

11. Globe Type "F" Rock Core Bit: to run on any Globe or H. C. Smith Coring Outfit.

One For Every Purpose
For Every Purpose The Best

Write for Catalog.

GLOBE OIL TOOLS

GLOBE OIL TOOLS CO.

LOS NIETOS, CALIFORNIA

SUCCESSORS TO
H. C. Smith Manufacturing Co., Inc. ++ Wieman-Kammerer-Wright Co., Inc. ++ National Tool & Metals, Inc.
BRANCHES
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YOU CAN HALT AN ARMY
WITH A SINGLE COMMAND

BUT IT TAKES MORE THAN A COMMAND TO STOP A STRING OF FALLING TUBING

Of course you have to be the "General" or "Big Boy" in the army, but most of us have the idea that we are the "Big Boy" all right, when occasion demands. That's why you ought to be tipped off about tubing, and here's the tip: When your tubing falls, and there's no catcher attached, you're lower than a buck private in the rear rank. And your pocketbook sinks correspondingly with the expense of ruined tubing, bottled up production, a fishing job, if not a ruined well.

The Guiberson Tubing Catcher stops a string of falling tubing neatly and positively within three inches. Dove-tail tracks guide the slips instantly and accurately to the casing walls. Strong spring operates with or without fluid in the hole. Heavy striker weight overcomes the retarding action of mud or paraffin. Let the Guiberson Tubing Catcher keep you in the rank of "General" among oil operators.

NEW DUPLEX CATCHER

Developed to meet safety requirements of tubing in deep wells. Multiple slips, actuated by common means, provide greater gripping area, distribute load and ease shock on casing. *Fully Patented.*

Use a GUIBERSON CATCHER

"Better Be Safe Than Sorry"

The GUIBERSON CORP.
Box 1106, Dallas, Texas
California Branch: 1304 Security Title Ins. Bldg., Los Angeles,
504 Wright Bldg., Tulsa
506 Trust Bldg., Newark, O.

GUIBERSON
BETTER BE SAFE THAN SORRY

LOUISIANA-ARKANSAS PROVEN AREAS

(Continued from Page 55)

Magnolia Pet. Co.'s No. 1 Peterson, 200 ft. S and E, NW cor. NE NE, Sec. 10-7-11.....Tested 25 bbls. at 2,432 ft; arranging to deepen.
L. K. McGuffin's No. 1 Bush, NW cor. NW SE, Sec. 1-7-11.....S.D. 400 ft.
Ben Merritt, tr.'s No. 2 Byrd, Sec. 1-7-11.....S.D. 88 ft.
The Texas Co.'s No. 1 G. L. Nabours, 1,120 ft. S, 330 ft. W, NE cor. SE, Sec. 2-7-11.....Drlg. chalk rock 2,424 ft.
Houston-Sabine Prod. Co.'s No. 1 Sabine Lbr. Co. (was Triangle Pet. Co.'s No. 2 Sabine Lbr. Co.), 330 ft. N and E, SW cor., Sec. 36-3-12.....S.D. 2,440 ft.

ARKANSAS

UNION COUNTY—EL DORADO

Lion O. & R. Co.'s No. 9-A G. P. Hayes, 242 ft. S, 246 ft. W, NE cor. Lot 5, NE, Sec. 4-16-15.....S.D. 5,021 ft.
Southern Prod. Co.'s No. 1 Wingfield, NE cor. SE NW, Sec. 16-19-15.....S.D. 2,603 ft.

UNION COUNTY—URBANA

Marine Oil Co.'s No. 1 Winn est., 330 ft. S and E, NE cor. S½ NW, Sec. 11-18-13.....T.A. 3,586 ft.
Marine Oil Co.'s No. 2-E Thompson, 330 ft. N, 330 ft. E, SW cor. NE NE, Sec. 10-18-13.....Location.
Wilson & Chapman's No. 1 H. Norman, 330 ft. N and E, SW cor. SE NE, Sec. 3-18-13.....Rigging up.

EAST TEXAS

PANOLA COUNTY

Ark.-La. P. L. Co.'s No. 14 Werner, 341 ft. S, 300 ft. W, NE cor. Werner 74-ac. tr., Ben C. Jordon Sur.....Coring 4,894 ft.
Daisy O. & G. Co.'s No. 1 Rucks, John Palmer Sur.....S.D. 3,264 ft; wtr.
Dillon & Braham's (was W. G. Banks et al's) No. 1 C. O. Baldwin, 1,395 ft. W, 1,362 ft. S, NE cor. Baldwin 290 ac., in Hampton West Sur.....S.D. 1,555 ft.
United Prod. Corp.'s No. 17 Steele, 1,320 ft. N, 660 ft. W, SE cor. C. D. Steele lse., in B. C. Jordan Sur.....Location.
Southwestern O. & G. Co.'s No. 1 E. R. Vinson, 3,005 ft. S, 1,001 ft. W, NE cor. C. T. Anderson Sur.....S.D. 2,650 ft.

MISSISSIPPI

HINDS COUNTY

Love Pet. Co.'s No. 3 Maley, 2,780 ft. E, 960 ft. S, NW cor., Sec. 15-5n-1e.....Completed; estimated 35,000,000 ft. gas 2,445 ft.

RANKIN COUNTY

James Alexander, tr.'s No. 1 Wright Cast Stone Co., 200 ft. S, 1,460 ft., NE cor. NE NW, Sec. 13-5n-1e...Derrick.

WILDCAT OPERATIONS IN MISSISSIPPI

ADAMS COUNTY

Company, farm and location—	Remarks:
Ark-La P. L. Co.'s No. 1 Brandon Hall Farms, 201 ft. from W line, 390 ft. from S line, Lot 32, Bradon Subd., Sec. 61-18n-1w	Rigging up.

CLARKE COUNTY

Gulf Ref. Co.'s No. 1-A Long Bell Lbr. Co., C SW SW, Sec. 10-2n-16w.....Location.

CLAY COUNTY
(Cable tools)

Ohio Oil Co.'s No. 1 Cantrell, NE cor., Sec. 16-15-5.....Arranging to set 7-in. csg. 4,474 ft.

HINDS COUNTY

Community Gas Co.'s No. 1 Millsaps College, Sec. 34-6n-1e.....Waiting on csg. 2,452 ft.
Howard Oil Co.'s No. 1 Jackson College, C NW NW, Sec. 9-5-1e.....S.D. 74 ft.
Southern Pet. Co.'s No. 1 Wilson (was Tri-State O. & G. Co.'s), 320 ft. E, 240 ft. N, SW cor. SE NE, Sec. 28-6-1e.....S.D. 20 ft; W.O.

HUMPHREYS COUNTY

Danciger O. & G. Co.'s No. 1 Belgrade Lbr. Co., C NW, Sec. 29-14n-4w.....S.D. 50 ft.

JASPER COUNTY

Bay Springs Pet. Co.'s No. 1 Keyes, C NW NE, Sec. 2-12-9.....Cored Wilcox 2,315-20 ft; S.D.

JEFFERSON COUNTY

Stokes & Cleve Love's No. 1 Phillips, Sec. 14-10n-2w....S.D. for fuel 960 ft.

MONROE COUNTY

Amory Dev. Co.'s No. 1 Bourland, Sec. 2-13-19.....S.D. 3,015 ft.
McAlpine et al's No. 1 Cowart, sec. hole, Sec. 2-13-19....S.D. 3,404 ft.

NEWTON COUNTY

Bob Talton et al's No. 1 Majure, 400 ft. N, 600 ft. W, SE cor., Sec. 25-16n-11e.....Rigging up.

NOXUBEE COUNTY

Thompson & Donohue's No. 1 Donohue, Sec. 25-16n-17e..Fishing for slip 1,531 ft.

RANKIN COUNTY

Attkisson & Dyer's No. 1 Valentour, 200 ft. S, 200 ft. E, NW cor., Sec. 18-5n-2e.....S.D. 31 ft.
Gulf Ref. Co.'s No. 1-A Hanna, Sec. 23-6n-1e.....Drlg. 2,442 ft.
Harding & Flint's No. 1 Webb, center Lot 32, Blk. B, East Jackson Pl., Jackson City Subd., Sec. 12-5-1....Derrick blown down.
Majestic O. & G. Co.'s No. 1 Elton Lbr. Co., Sec. 10-4n-3e. Derrick.
R. A. Moore et al's No. 1 Interior Lbr. Co., Sec. 28-6-1e..S.D. 900 ft.
Square Deal O. & G. Co.'s No. 1 Spann, NW cor. SE NE, Sec. 13-5n-1e.....Drlg. 1,447 ft.
Willis & Culley's No. 1 Applewhite & Holden, 10 ft. N, 60 ft. E, SW cor., Sec. 12-5n-1e.....Derrick.

SCOTT COUNTY

M. U. Culley et al's No. 1 Owens, Sec. 2-5-9.....Derrick.

WARREN COUNTY

Eagle Bend O. & G. Co.'s No. 1 Kiger, SW cor. SW SE, Sec. 9-18-2.....S.D. 2,607 ft.

WEBSTER COUNTY

P. J. McAlpine's No. 1 Henly (was Cumberland Oil Co.'s No. 1 Henly), SE NW, Sec. 15-21n-11e.....Arranging to resume drlg. 1,795 ft.

WINSTON COUNTY

Miss. Drlg. Co.'s No. 1 Scarbrough, NW cor., Sec. 15-12-14.....Drlg. 3,580 ft.

YALOBUSHA COUNTY

Collett-Carter Oil Co.'s No. 2 Blackmur, 990 ft. W, 285 ft. N, C, Sec. 11-11-4.....T.A. 3,478 ft.

WILDCAT OPERATIONS IN LOUISIANA-ARKANSAS

(Continued from Page 55)

Mack Jourden Co.'s No. 1 Lockett, 4,035 ft. S, 1,980 ft. E, NW cor. SW, Sec. 29, in Sec. 32-13-10.....S.D. 2,500 ft.

RICHLAND PARISH

Alto Gas Co.'s No. 2 Hunt, 660 ft. S and E, NW cor., Sec. 13-17-5.....Derrick.
National Gas Co.'s No. 1 Singletary, 1,980 ft. N, 660 ft. W, SE cor., Sec. 20-18n-7e.....Rigging up.
Southern Carbon Co.'s No. 1-B C. M. Noble, 2,966 ft. N, 1,525 ft. W, cor. Secs. 7, 8, 17 and 18, in Sec. 37-15-6. Location.

SABINE PARISH

Diffie & Barnett's No. 1 Lites (was J. W. Clark's), 350 ft. N, 330 ft. W, SE cor. SW NW, Sec. 34-8-11.....S.D. 105 ft.
R. L. Gay, tr.'s No. 1-A Long Bell Lbr. Co., 430 ft. S, 200 ft. W, NE cor. NW NW, Sec. 10-8-13.....D.S. test from 2,585-3,628 ft; oil and S.W.
Langbridge Oil Co.'s No. 1 Stephens, 330 ft. N and E, SW cor. SE NE, Sec. 17-9-11.....S.D. 2,215 ft; repairing rig.
J. J. Keen, tr.'s No. 1 Belton (no check), Sec. 31-9-13..Set 8-in. 1,590 ft.
H. W. Perritt's No. 4 Bowman-Hicks, SE cor. SE NE, Sec. 2-7-12.....Tested small show oil 2,502 ft; S.D; W.O.
A. H. Thames' No. 1 Edward est., 150 ft. NW SE cor. NE SE, Sec. 3-8-13.....S.D. for wtr. 1,200 ft.

TENSAS PARISH

A. R. Willis et al's No. 1 Currey, 1,320 ft. S, 1,320 ft. E, NW cor., Sec. 39-11-12.....S.D. 3,545 ft.

UNION PARISH

Dan Brooks' No. 1 Odus Douglas, 330 ft. S and E, NW cor. NE SW, Sec. 9-22-3.....Rigging up.
T. P. Fields, tr.'s No. 1 Summitt Land Co., C W½ NW, Sec. 1-21-1w.....S.D. 3,056 ft.

WINN PARISH

Gulf Ref. Co.'s No. 1-A Bodcaw Lbr. Co., 911 ft. N, 970 ft. E, SW cor., Sec. 4-10-5w.....Coring 3,970-74 ft.

ARKANSAS

CHICOT COUNTY

R. R. Smith's No. 1 Lytle, 660 ft. N, 660 ft. E, C, Sec. 21-28-3.....T.A. 2,925 ft.

COLUMBIA COUNTY

Kendall Oil Co.'s No. 1 Fullenwelder, Rhea & Kitchen, Sec. 13-17-22.....S.D. 804 ft.

CLAY COUNTY

S. C. Jeffus' No. 1 Underwood, 510 ft. N, 350 ft. W, C NW SE, Sec. 4-20-8.....S.D. 1,252 ft.

CLEVELAND COUNTY

Crum & Stillwell's No. 1 E. R. Bell, Sec. 10-10s-12w.....Rigging up.

CLEBURNE COUNTY
(Cable tools)

Donnelly-Craver et al's No. 1 Donophan Lbr. Co., SE cor. NW, Sec. 33-11-9.....S.D. 3,740 ft.

DALLAS COUNTY

E. C. Brewer's No. 1 W. E. Hillman, 330 ft. E, 40 ft. S, NW cor. SE NE, Sec. 20-10-13.....S.D; W.O. 2,869 ft.
J. H. James, tr.'s No. 1 Fordyce Lbr. Co., 200 ft. S, 200 ft. E, NW cor. NE, Sec. 11-9-15.....S.D. funds 2,520 ft.
Zepp O. & G. Co.'s No. 2 Hillman, 450 ft. E, 340 ft. S, NW cor. SE NE, Sec. 10-20-13.....Derrick.

DREW COUNTY

Co-Operative Dev. Co.'s No. 1 R. L. Hardy, SW cor. NE NE, Sec. 6-13-7.....Rigging up.

HOT SPRINGS COUNTY

Star Oil Co.'s No. 1 Cunningham, 285 ft. S, 285 ft. W, NE cor., Sec. 11-5-16.....Drlg. hard rock 1,116 ft.

LINCOLN COUNTY

Lawrence Cook, tr.'s No. 1 McGhee Planting Co., 420 ft. S, 220 ft. W, NE cor. NE SW, Sec. 5-8-7.....S.D. 2,198 ft.

LITTLE RIVER COUNTY

Roberts Oil Co.'s No. 1 H. J. Russell, 330 ft. E, 330 ft. S, NW cor., Sec. 25-12-29.....Location.

LOGAN COUNTY

J. H. Flowers' No. 1 J. H. White, Sec. 13-6-26.....S.D; W.O. 3,570 ft.

MILLER COUNTY

W. E. Noel et al's No. 1 Dickson hrs., 1,980 ft. W, 660 ft. S, NE cor., Sec. 11-20-27.....Began July 27; drlg. 1,600 ft.

OUACHITA COUNTY

Boling & McLeon's No. 1 L. D. Nealy, 150 ft. S, 150 ft. W, NE cor. SE SW, Sec. 25-16-15.....S.D. 2,036 ft.

PIKE COUNTY

E. R. Henderson's No. 1 Tilyou, 660 ft. W, 500 ft. S, NE cor. NE SE, Sec. 26-8-14.....T.A. 2,909 ft.
E. R. Henderson's No. 1 J. L. Lee, 400 ft. S, 350 ft. E, NW cor. SW SE, Sec. 31-8-24.....S.D; W.O. 1,020 ft.

SCOTT COUNTY

Heavener O. & G. Co.'s No. 1 Riser, Sec. 36-4-26.....S.D; T.D. 1,436 ft.
Waldron O. & G. Co.'s No. 1 White, NE cor. SW NW, Sec. 17-3n-29.....S.D; waiting on csg. 1,860 ft.

SEBASTIAN COUNTY

Ozark Nat. Gas Co.'s No. 1 E. O. Girard, C NW NW, Sec. 34-8-30.....Drlg. 2,132 ft.

UNION COUNTY

Chapman & Wilson's No. 1 A. H. Hadley, 330 ft. N, 330 ft. E, SW cor. NE SW, Sec. 3-18-13.....600 ft. fluid 30% S.W. in hole; T.A. 3,570 ft.

WASHINGTON COUNTY
(Cable tools)

C. H. Willoughby's No. 1 Jones, Sec. 34-16-30.....S.D. for funds 1,795 ft.

YELL COUNTY
(Cable tools)

Tegmeier & Luckett's No. 1 Falcon, Sec. 36-7-21.....S.D. 5,710 ft.

EAST TEXAS

BOWIE COUNTY

Hindeman & Ball's No. 1 Merritt (was Maud-Redwater Oil Co.'s), 175 ft. N, 175 ft. E, SE cor. G. W. Hardidge 100-ac. tr. on Floyd Merrit tr. in Y. S. McKinney Sur.....S.D. 2,520 ft.
Tarkington & Jones' No. 1 W. W. Whybark, 200 ft. S, 200 ft. W of SW cor. J. H. Dyer Sur.....S.D. 30 ft.
Lee Timberlake et al's No. 2 Tidwell, 2,510 ft. N, 655 ft. W, SE cor. T. M. Rice Sur.....S.D. 3,000 ft.

CAMP COUNTY

McDonald Bros.' No. 1 Tillery, 150 ft. E, 450 ft. S, NW cor. 137-ac. tr. in J. H. Murphy Sur.....S.D. 3,600 ft.

CASS COUNTY

E. K. Atkinson's No. 1 T. J. Wilson, 1,088 ft. S of N line, 2,376 ft. E of W line of H.R.S., J. R. McFarland Sur.....S.D. 3,021 ft.
R. G. Baker's No. 1 W. R. Caver, on W. R. Caver 75-ac. tr., John Lick Sur.....Dry and abd. 3,760 ft.
Davis & Pigg's No. 1 Roy Brian, SW cor. Roy Bryan 88-ac. tr., Albert H. Latimer Sur.....S.D. 2,055 ft.
Everts Drlg. Co.'s No. 1 H. W. Whittington, 200 ft. S. and W, NE cor. 69-ac. Whittington tr., L. Strong Sur.....S.D. 3,922 ft; waiting on D.S.
Geo. McKamie's No. 1 R. E. Hall, 150 ft. N, 150 ft. W, SE cor. Hall's 117-ac. tr., H. Buckler Sur.....S.D; W.O. 4,080 ft.
C. E. Murdock's No. 1 First National Bank, Evans Watson Sur.....S.D. 4,390 ft.
John Nelson's No. 1 T. A. Irvin, 200 ft. S and E of NW cor. McNary Harris Sur.....S.D. 3,615 ft.
Olds & Smith's No. 1 Atheny, 3,056 ft. W-E line, 856 ft. S-N line, J. C. Byers Sur.....S.D. 3,100 ft.
John C. Rogers' No. 1 I. E. Lanier, 573 ft. N, 879 ft. W, SE cor. Lanier 86 ac. in K. E. Welborn Sur....Reaming to bottom 3,280 ft.
John C. Rogers et al's No. 1 W. Q. Henderson, 3,100 ft. S, 3,100 ft. E, NW cor., Wm. Davis Sur.....S.D. 955 ft.

HARRISON COUNTY

Gholson et al's No. 1 Bivins Farm Co., on J. K. Bivins, Jr.'s 320-ac. tr., Thos. Toby Sur.....S.D. 2,759 ft.
Lloyd Oil Corp.'s No. 1 E. S. Timmons, 150 ft. from N line to 250 ft. from E line of 105-ac. tr., Findley Sur.....Set 10-in. 240 ft; S.D; W.O.
O. O. Olford et al's No. 1 R. W. Bolding, 330 ft. E of SE cor. J. B. Cullen's 161-ac. tr., 300 ft. N of N line of Mrs. C. L. Brown's 20-ac. tr., W. W. O. Stanfield Sur.....S.D. 2,702 ft.
O. H. Parkening's No. 1 T. J. Taylor, C, Blk. 32, W. H. Payne Sur.....S.D. 2,530 ft.
Ryan Consolidated Pet. Corp.'s No. 1 Dr. H. H. Key, 1,500 varas N of SE line, 500 varas E of SW line, of E. Carroll Sur.....Set 6-in. 5,282 ft.
Ryan Consolidated Pet. Corp.'s No. 1 J. M. Furh, 1,300 ft. N of NW cor. T. J. Copelin Sur., 1,675 ft. SW at right angles to NW SE line of O'Neal Sur.....Derrick.
Thomas & Kinsey's No. 1 J. R. Watson, Thos. Iden Sur..Rigging up.

MARION COUNTY

Gist, Claunch & Dodson's No. 1 Miller, 1,470 ft. E line, 735 ft. N line, SW cor. H. Fulgran H.R. Sur.....S.D. 300 ft.

Geo. Hindeman et al's No. 1 F. V. Lindsey, 2,500 ft. S, most northerly N line, 3,655 ft. E most easterly W line, Alexander Albright Sur. ..... S.D. 2,380 ft.
Hindeman & Rhondo's No. 1 McGaughey, 1,547 ft. W most northerly SW cor., 1,638 ft. N most northerly S line, W. J. Willis Sur. ..... S.D. 3,910 ft.

PANOLA COUNTY

Hoffer et al's No. 1 Cameron Lbr. Co., center 1,206-ac. tr. in W. M. A. LaGrove Sur. ..... Derrick.
Moses & Wallace's No. 1 Daniel, 600 ft. N and W lines, Mrs. Gerrell 100-ac. tr., SW cor. Isabel Hanks Sur. Spudded and S.D.
G. A. Davidson's No. 1 Latham, Wm. Rich Sur. ..... S.D; changing to heavy rig 550 ft
J. L. Nelson et al's No. 1 J. W. Williams, 300 ft. S, 700 ft. W, NE cor. Williams' 67-ac. tr. in Jas. Hanks Sur. ..... Set 12½-in. 400 ft.

RED RIVER COUNTY

D. M. Buffington's No. 1 Hossler, E. Hughhart Sur. .... S.D. 2,795 ft.
Johnson Pet. Co.'s No. 2 Randolph, Edw. Dean Sur. .... S.D. 2,380 ft.

SHELBY COUNTY

I. M. Bradley's No. 1 Ashberry (no check), G. W. Mitchell Sur. ..... S.D. 3,380 ft.
E. L. Chapman's No. 1 Pickering Lbr. Co., C. E. Henry (headright) ..... Trying to kill gasser; T.D. 3,864 ft.
Chapperell Oil Co.'s No. 2 Holt, Matthew Moore Sur. ... Arranging to set 6⅝-in. 3,127 ft.
K. H. Francis' No. 1 John Mims, Mary Smith Sur. ..... Drlg. shale 1,620 ft.
H. P. Glidden's No. 1 Pickering Lbr. Co., Jonas Harrison Sur., 300 ft. E of NW cor., 150 ft. S of N line at right angles Pickering 59-ac. tr. ..... Drlg. shale 3,160 ft.
H. H. Gracey's No. 1 J. A. Morrison, 1,500 ft. N, 200 ft. E, SW cor. J. A. Morris' 109-ac. tr., Wm. English Sur. ..... S.D. 2,600 ft; drlg. wtr. well.
Wm. A. Stephens' No. 1 Foster & Billingsly, 150 ft. W of CEL, Foster & Billingsly's 109-ac. tr., J. Bowlin Sur. ..... Abd. at 1,540 ft.
T. A. Martin's No. 1 J. B. Bush, S 8° E, 2,000 ft. from NW cor. J. B. Bush's 77-ac. tr., thence E at right angles to said line 200 ft., Alfred Lindsey Sur. .... Derrick.
Henry Mauilding's No. 1 Frost Lbr. Co., NE cor. Frost Lbr. Co.'s 80-ac. tr., A. D. Fountain Sur. ..... Fishing 2,805 ft.
Geo. N. Pace's No. 1 E. H. Powers, western J. Timms Sur., 150 ft. E of W line, 200 ft. N of S line Powers 126-ac. tr. ..... Derrick.
Ridgeway et al's No. 1 Polley, Domingo Gonzales Sur., 3,180 ft. E of SW cor., 160 ft. N at right angles of Polley 457-ac. tr. ..... Derrick.
Schultz et al's No. 1 Hughes, 150 ft. SW cor. Hughes' 110-ac. tr., J. Clay Sur. ..... Drlg. lime 4,000 ft.
Sloan Prospecting Co.'s No. 1 Sanford, approximately 300 ft. N and 200 ft. E, SW cor. B. Sanford 49-ac. tr. in M. M. Van Sur. ..... Coring 3,649 ft.
A. D. Smith's No. 1 Y. D. Carroll-J. A. Parker Sur., 1,500 ft. N, 300 ft. W, SE cor. J. A. Carroll Sur. .... Drlg. 1,320 ft.
C. H. Tautenhahn's No. 1 J. C. Bogard, 300 ft. S, 900 ft. E, NW cor. J. C. Bogard's 52-ac. tr., Thomas Baker Sur. ..... S.D. 20 ft; waiting on D.S.
Tenant et al's No. 1 J. Henry, C. Z. Walker Sur. ..... S.D. 2,450 ft.

WILDCAT OPERATIONS IN SOUTHWEST TEXAS

(Continued from Page 56)

DEWITT COUNTY

Gibson & Sturm's No. 1 Clark, Dolores Alderete Sur. .. Rigging up.

DUVAL COUNTY

Coffee et al's No. 1 Jose Garza, center Sur. 49 ..... T. D. 1,780 ft.; drlg.
L. E. Lockhart's No. 1 Sutherland, 330 ft. from N and W lines of Sur. 511 ..... Spudded in.
O'Byrne et al's No. 1 Well, B.S.&F. Sur. No. 568 ..... T. D. 2,655 ft.; abnd.
S. J. Carpenter et al's No. 1 Juan Benavides, Blk. 35, Mesquite grant ..... T. D. 1,712 ft.; standing.
Frank Gravis' No. 1 Shallert, Sur. No. 256 ..... Derrick.
Southern Crude Oil Pur. Co. and Camp's No. 1 Hubbard, 1,650 ft. from S line, 330 ft. from E line of Sur. No. 75 ..... T. D. 2,305 ft.; drlg.

FAYETTE COUNTY

Elam & Reynolds' No. 1 Florence, M. Muldoon Sur. No. 13 ..... T. D. 2,610 ft.; flowing fresh wtr.

GOLIAD COUNTY

V. F. Neuhaus' No. 1 J. E. Pettus, 4,750 ft. N, 28 degrees 20 minutes W of extreme SE cor. of 3,418-ac. tract in Maria de Jesus Ybarbo Sur. ..... T. D. 4,307 ft.; plugged back to 4,287 ft.

GUADALUPE COUNTY

Camp et al's No. 1 Sue Denman, 450 ft. N of highway, 150 ft. from E line of tract in William Arrington Sur. ..... Set surface csg.
Harry Bruner's No. 1 Jim Sherrill, 330 ft. from NW and SW lines of tract in George Allen League .... T. D. 180 ft.; standing.
McGarrity et al's No. 1 A. Wesch, Jr., 150 ft. to N and E lines of farm, H. M. Thompson Sur. ..... T. D. 1,040 ft.; drlg.
Schleyer, Atherton and Armstrong's No. 1 Ogletree, Robert Smith Sur. ..... T. D. 1,745 ft.; shut down.
Linne et al's No. 1 J. E. Linne, center 263-ac. tract in V. Cortario Sur. ..... T. D. 1,010 ft.; drlg.
W. J. Walton's No. 1 Zoboroski, 700 ft. W line of tract, 500 ft. S of Guadalupe River, in Joseph D. Clements Sur. ..... T. D. 2,210 ft.; flowing 8 bbls. daily.

HAYS COUNTY

J. C. Jones et al's No. 1 Byder, John Ingram Sur. .... T. D. 920 ft.; standing.

JIM HOGG COUNTY

Peterman & Minahan's No. 1 Palacious, Sur. No. 231 .. T. D. 1,360 ft.; shut down.
D. C. DeWitt's No. 1 Teofilo Gomez, 1,170 ft. from N line, 150 ft. from W line of Sur. 13 ..... T. D. 200 ft.; shut down.

JIM WELLS COUNTY

Carsil Oil & Gas Co.'s No. 3 McGill, 450 ft. S, 300 ft. E of No. 1 McGill in Wm. D. Baldwin Sur. ..... T. D. 2,804 ft.; may shoot.

KARNES COUNTY

V. F. Neuhaus' No. 1 Russell, 150 ft. from E line of tract, 150 ft. N of highway, Carlos Martinez Sur. .. Location.

KENDALL COUNTY

Borgett et al's No. 1 W. Haag, 3,804 ft. from N line, 1,506 ft. from W line of W. Avery Sur. ..... T. D. 1,215 ft.; drlg.
Dixon Oil Co.'s No. 1 Ottmar Behr, 823 ft. from S and N lines of Jessie Wilson Sur., 3 miles S of Sisterdale ..... T. D. 2,674 ft.; drlg.
Sitton et al's No. 1 Garvin, C of NE of D. L. Richardson Sur., in the D. L. Richardson Sur., 1 mile NE from Kendalia ..... T. D. 1,482 ft.; shut down.
Fred S. Dibble's No. 1 Ellebrach, Sur. 77, N part of county ..... Spudded in and shut down.
Hicks et al's No. 1 Speck & Wiedner, Thomas Sur. No. 27, 2 miles S of Twin Sisters ..... Drlg.
Sartain's No. 1 Lawhon, 30 ft. SE of Perkins' No. 1 Lawhon; taken over at 281 ft. ..... T. D. 650 ft.; no report.

KERR COUNTY

Herbert Oil Co.'s No. 1 J. D. Witt, 1,320 ft. N line, 1,320 ft. W line of Sec. 1,923, W. H. Hamilton Sur. .T. D. 200 ft.; standing.
Evans & Gant's No. 1 Selker-Mears, C.C.S.D.&N.G.R.G. Sur. No. 1,605 ..... T. D. 4,031 ft.; shut down.
Evan's & Gant's No. 1 E. Young, A. E. Burge Sur. No. 28 ..... T. D. 1,312 ft.; rig.
Evans & Gant's No. 1 Love in J. Martinez Sur. No. 1,594, 1,320 ft. from W line of survey and 660 ft. S of S line of Sur. No. 1,597 ..... T. D. 4,060 ft.; shut down.
Evans & Gant's No. 2 Love, 150 ft. S and W line of Sur. 1,593 ..... T. D. 450 ft.; fishing.
B. M. Hatfield's No. 1 Westland, Blk. 23, Westland Subd. to Kerrville ..... T. D. 460 ft.; standing.

KIMBLE COUNTY

C. L. Bryant et al's No. 1 Lambert, 7,700 ft. N and W lines of F. Lotta Sur. ..... T. D. 850 ft; standing.

LIVE OAK COUNTY

Catlett & O'Neil's No. 1 Hatcher, 253 ft. from S line, 3,200 ft. from W line of 703-ac. tract in James McGloin Sur. ..... T. D. 2,620 ft.; coring.
Henderson Coquat's No. 1 Hewitt ..... T. D. 400 ft.; drlg.

LEE COUNTY

Burt et al's No. 1 R. C. Saunders, J. Maxmillan Sur. .. T. D. 4,034 ft.; shut down.
A. H. Wheeler and associates' No. 1 fee, Blk. 47, H. Donohue Sur. ..... T. D. 3,360 ft.; drlg.
C. B. Polk et al's No. 1 Stoltz, Hiram Donohue Sur. .. T. D. 2,300 ft.; shut down.

MAVERICK COUNTY

I. N. Boicourt's No. 1 Bandera School Land..... T. D. 2,138 ft.; drlg.

McLENNAN COUNTY

C. E. Groone et al's No. 1 League ..... T. D. 1,230 ft.; shut down.

McMULLEN COUNTY

Belt Pet., Inc.'s No. 1 Martin, 150 ft. NW line, 150 ft. to SW line of E. Melon No. 212 Sur. ..... T. D. 28 ft.; standing; reorganized as Graymore Pet. Co.
Whall, Scherer et al's No. 1 Shiner, Henry Brewer Sur. .. T. D. 2,008 ft.; shut down.

MEDINA COUNTY

Frank A. Brown's No. 1 Fohn, 150 ft. from E line, 790 ft. from N line of J. F. Torry Sur. No. 113 .... Rigging up.
O. H. Fretelliers' No. 1 J. F. Riley, 450 ft. from N and 750 ft. from E line of tract in Survey No. 449..... T. D. 130 ft.; shut down.
Genard Bros.' No. 1 L. Crawford, 150 ft. to N and W lines of tract in J. Keppler Sur. No. 478..... T. D. 830 ft.; drlg.
J. H. Hickey's No. 1 Jungman, at N end Chicon Lake .. T. D. 650 ft.; shut down.
Star Pet. Co.'s No. 1 Medina Valley Irrigation Co., 150 ft. from S and E lines of Isom Palmer Sur. No. 20 ..... T. D. 760 ft.; drlg.
Sunflower Oil Co.'s No. 1 Mofield, J. Brothag Sur. No. 522 ..... T. D. 2,100 ft.; plugging back.
Yancey Dev. Co.'s No. 1 Fassler, Sur. No. 801 ..... T. D. 1,945 ft.; making drill stem test.

MILAM COUNTY

Dil-Tex Oil Corp.'s No. 1 Dilbeck, 450 ft. N and E lines of farm, Fernando Rodriguez Sur. ..... T. D. 2,500 ft.; shut down.
H. W. Elliott's No. 1 Marek, 767 ft. from N line, 500 ft. from W line of 160-ac. tract, in B. Wickson Sur.... Spudded in.
Nowlen's No. 1 Beard, 1,350 ft. from SE line, 450 ft. from SW line of farm, in J. F. Guthrie Sur., 4 miles S Thorndale ..... Rigging up.
Red Bank Oil Co.'s No. 1 Foster, A. G. Berry Sur. .... T. D. 4,150 ft.; drlg.
Wilson-Broach Co.'s No. 1 E. L. White, 250 ft. from S and E lines of S. Frost Sur. .. .. T. D. 2,627 ft.; drlg.

NUECES COUNTY

Southern Crude Oil Pur. Co.'s No. 1 Chas. E. Stratton, 1,650 ft. E line, 330 ft. S line of P. Sancho Sur. .... T. D. 3,852 ft.; shut down.

REAL COUNTY

McGinley Corp.'s No. 1 Haby, C of SW. Sec. 175..... T. D. 2,440 ft.; sidetracking tools.

SAN PATRICIO COUNTY

Jacob, Buzini, Pickett's No. 2 Baldwin, three-fourths mile from S and W lines of tract ..... Set surface csg. 300 ft.
United Production Co.'s No. 1 Mayfield, 330 ft. from S and E line Blk. 10 Roos Sur. ..... T. D. 3,283 ft.; abnd.
Welder Oil Corp.'s No. 1 Welder, 1,500 ft. S, 800 ft. W of Aransas Oil Corp.'s No. 1 Welder ..... T. D. 3,705 ft.; abnd.

STARR COUNTY

Hooks & Weaver's No. 1 Kelsey-Bass, in Blk. 6, Porcion 76 ..... T. D. 175 ft.; drlg.

TRAVIS COUNTY

C. R. Franklin et al's No. 1 J. Wilson, 160 ft. from N and W lines of farm in A. Alexander Sur. ... Rigging up.
Fritz Fuchs' No. 1 L. Ballerstedt, 450 ft. from N line, 750 ft. from E line of tract in Amos Alexander Sur. ..... T. D. 1,050 ft.; drlg.
Fritz Fuchs' No. 1 A. F. Smith, 150 ft. from W line, 750 ft. from N line of tract in D. Kimbor Sur. .... Location.
Ray & Henze's No. 1 Hatech, in C of tract in S. Hamilton Sur. ..... Spudded in and shut down.
Waldron et al's No. 1 T. Cook, 900 ft. from NW line, 3,500 ft. from SW line of D. H. Minor Sur..... T. D. 740 ft.; underreaming.

WEBB COUNTY

Cole Pet. Co.'s No. 4 Benavides, Sur. No. 1,613 ..... T. D. 3,075 ft.; drlg.
Eugene Garner, Jr.'s No. 1 Billings, 411 ft. E line, 956 ft. N line of NW NE, Sur. 71 ..... Building derrick.
Southern Gas Utilities and O. W. Killam's No. 1 de la Garza ..... T. D. 2,220 ft.; drlg. deeper.

WILLIAMSON COUNTY

Citizens Oil Development Co.'s No. 1 A. Forewood, 1,000 ft. to NE line, 1,100 ft. to SE line of farm and survey in A. S. Fisher Sur..... T. D. 932 ft.; abnd. dry.
Citizens Oil Development Co.'s No. 2 Forewood, 1,200 ft. to NE line, 1,420 ft. to SE line of farm and survey in A. S. Fisher Sur..... T. D. 1,004 ft.; drlg.
Hays & Gee's No. 1 E. G. Johnson, 1,800 ft. from N line, 170 ft. from E line of tract in B. C. Low Sur., S of Georgetown ..... T. D. 1,200 ft.; drlg.
H. Fritz et al's No. 1 fee, 450 ft. from S line, 1,050 ft. from W line of farm in H.T.&B. Sur. ..... T. D. 840 ft.; drlg.
R. S. Wilson's No. 1 Speckels, 150 ft. N of road, 600 ft. from W line of farm in J. Jordan Sur., 1 mile N of Coupland ..... Rigging up.

WILSON COUNTY

A. M. Blume's No. 1 Nickolson, C. Diaz Sur. ..... T. D. 1,066 ft.; shut down.
Sun Oil Co.-Penn Oil Co.'s No. 1 Tudyke..... Core test.

ZAPATA COUNTY

O. W. Killam's No. 1 A. M. Bruni, 2,610 ft. from NE line and 3,850 ft. from SE line of 2,561-ac. tract in Borrego grant ..... Rigging up.
McCaldin, Owen & Newton's No. 1 F. Guerra, in Sur. 161. Spudded in.
H. L. Sargent's No. 1 Gutierres, 922 ft. from W line, 472 ft. from S line of Blk. 5, Porcion 10, in Borrego grant ..... Location.
C. J. Webster Oil & Gas Co.'s No. 1 Benavides..... T. D. 1,890 ft.; drlg.
T. H. Ward's No. 1 Uribe, 150 ft. NW line, 150 ft. SW line, Blk. 8 Subd., Share 7, Partition No. 6, T. Uribe Partition of Jose V. Borrego Sur. ..... Rigged up and standing.
Bill Henry et al's No. 1 Gopher Trust estate, Borrego grant ..... T. D. 1,365 ft.; standing.
Penny Prod. Co.'s No. 1 Juan V. Cuellar, Jr., et al, 175 ft. NE line, 175 ft. SE line, Poppas Subd., Porcions 33 and 34, Blk. 1, Sur. 2 ..... T. D. 2,035 ft.; drlg.
National Oil Co.'s No. 1 Zapata Trust Estate, 617 ft. NW line, 96 ft. NE line, Blk. 97, De Prom Subd., Porcion 6 ..... T. D. 690 ft.; drlg.
National Oil Co.'s No. 2 Adams, 150 ft. from NW line and SW line, Blk. 11, Borrego grant ..... T. D. 1,320 ft.; drlg.

UPSET $29,000,000 FINE

CHICAGO, Aug. 8.—Merritt Starr, 75, attorney, who succeeded in having set aside the $29,000,000 fine levied against the Standard Oil Co. by former federal Judge Kenesaw Mountain Landis, died here this week. He has been in failing health for several years.

C. E. SEELEY DIES

Charles E. Seeley, 71 years old, pioneer Oklahoma oil man and resident of Tulsa for 14 years, died at the home of his son, Frank Seeley, in Big Spring, Tex. He located in Nowata 22 years ago as field superintendent for the Laurel Oil & Gas Co.

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GARLOCK

GULF COAST FIELDS AND WILDCATS

(Continued from Page 58)

HIGH ISLAND—GALVESTON COUNTY

Yount Lee Oil Co.'s No. 22 Cade, N. Fitzsimmons Sur., 125 ft. S of No. 21 ..... Spudded.

HULL—LIBERTY COUNTY

The Texas Company's No. 2 Barrow (W.O.), Jesse Devore Sur., 276 ft. W and 50 ft. S of NE cor. Barrow tract ..... Pulling liner to deepen 3,866 ft.

DAMON MOUND—BRAZORIA COUNTY

Layne et al's No. 8 Wisdom, 155 ft. from NW line and 150 ft. from NE line, Lot 52, Blk. D, Wisdom Subd., A. Darst Sur. ..... Drlg. gumbo 1,397 ft.

D. C. Wellock's No. 1 Damon, John P. Mills Sur., 1,115 ft. NE line and 9v ft. W line Blk. 1 ..... Sandy shale 690 ft.; bailed open hole, showing salt water; shut down.

ESPERSON—LIBERTY COUNTY

Cranfill-Reynolds Oil Co.'s No. 1 Davis (D.D.), 50 ft. out of SE cor. of David Kokernot Sur. ..... No report.

ORANGE—ORANGE COUNTY

Jefferson Production Co.'s No. 1 Bland ..... Sticky shale 2,925 ft.; shut down.

HANKAMER—LIBERTY COUNTY

Gulf Prod. Co.'s No. 14 Boyt, H.&T.C. Sur. No. 22, 500 ft. N of No. 10 ..... Total depth 6,005 ft.; plugging back.

LOST LAKE—CHAMBERS COUNTY

Pure Oil Co.'s No. 6 Lost Lake, 2,331 ft. W and 289 ft. S of No. 5 in Lost Lake ..... Location.

MOSS BLUFF—LIBERTY AND CHAMBERS COUNTIES

Humble Oil & Ref. Co.'s No. 8 Sterling, James McFaddin Sur., 150 ft. from N line and 1,650 ft. from E line of 512-acre tract ..... Derrick.

REFUGIO—REFUGIO COUNTY

Mission Drilling Co.'s No. 1 O'Brien (W.O.), SW cor. 12½-acre tract, Refugio Town Tract ..... Sand showing oil 6,452-59 ft.; cmtd. 5 3/16-in. csg. 6,452 ft.

Moody-Seagraves Producing Co.'s No. 4 O'Connor, Refugio town tract, 150 ft. from N line and 1,282 ft. from W line of 60-acre tract ..... Tested salt water 6,477 ft.; to plug back.

T. P. Morgan's No. 1 Lambert, Refugio town tract, 450 ft. from N line and 650 ft. from W line of 105-acre tract ..... Hard shale 6,532 ft.; dry and abd.

Pearson Properties' No. 3 Ryals, 536 ft. from W line and 150 ft. from S line 52-acre tract, Refugio Town Tract ..... Drlg. shale and lime 5,692 ft.

L. L. Smith's No. 1 L. M. Rogers (W.O.), C of Blk. 37, Refugio Townsite ..... Pulled screen 6,451 ft.; to sidetrack old hole.

United Prod. Corp.'s No. 6 O'Brien, 150 ft. from S line of tract, 350 ft. W of No. 3 ..... Oil sand 6,433-51 ft.; twisted off joint drill stem; waiting orders.

United Prod. Corp.'s No. 1-B W. J. Fox, Wm. Hews and L. Brown Sur., 2,541.7 ft. NE along SE line from SE cor. lease and 300 ft. NW at right angles ..... Sand showing oil 5,865-72 ft.; cmtd. 5 3/16-in. csg. 5,864 ft.

United Prod. Corp.'s No. 4 M. F. Lambert, Wm. Hews and L. Brown Sur., 2,514.7 ft. NE along NW line from SE cor. lease and 330 ft. NW at right angles... Drlg. sticky shale 3,372 ft.

SOUTH LOUISIANA FIELDS
LOCKPORT—CALCASIEU PARISH

Vacuum Oil Co.'s No. 5-A Farquahar, 105 ft. S and 110 ft. E of NW cor. SW NE Sec. 8-10s-9w ..... Drill stem stuck 6,079 ft.

JENNINGS—ACADIA PARISH

Yount Lee Oil Co.'s No. 10 Houslerre-Latrielle, 5,435 ft. E and 1,070 ft. N of SW cor. Sec. 47-9s-2w ..... Drlg. shale 5,998 ft.

EDGERLY—CALCASIEU PARISH

Rex Petroleum Co.'s No. 3 Prairie Narroni, Sec. 21-9s-11w, 125 ft. from S line and 50 ft. from W line of tract ..... Drlg. hard sand 4,006 ft.

HACKBERRY—CAMERON PARISH

R. E. Seiss' No. 2 J. M. Vincent ..... Total depth in rock 2,042 ft.; cmtd. 6⅝-in. csg. 2,004 ft.

J. G. Sutton's No. 2 Erwin, Sec. 13-12s-10w ..... Drlg. rock 2,500 ft.

The Texas Company's No. 3 State ..... Derrick.

VINTON—CALCASIEU PARISH

Vinton Pet. Co.'s No. 7 Matilda Gray (D.D.), 157 ft. N and 674 ft. W of SE cor. SW NE of Sec. 33-10s-12w.. Set 1 jt. 3-in. screen 3,390 ft.; bailed salt water.

SWEET LAKE—CAMERON PARISH

Magnolia Pet. Co.'s No. 2 Sweet Lake, Sec. 5-13s-7w .... Drlg. rock 7,443 ft.

SULPHUR—CALCASIEU PARISH

Union Sulphur Co.'s No. 767 fee, 328 ft. E and 180 ft. N of C Sec. 39-9s-10w ..... Oil sand 2,737-45 ft.; cmtd. 9⅝-in. csg. 2,737 ft.

MISCELLANEOUS WILDCATS
TEXAS
AUSTIN COUNTY

Parmerson & Cafferkey et al's No. 1 W. N. Schlecte, John Fitzgibbons Sur., 1,850 ft. from SE line and 3,100 ft. from NE line of survey ..... Shut down 1,502 ft.

BRAZORIA COUNTY

Cullen & West's No. 1 Nash, Thomas Alsbury Sur. No. 4, 2,600 ft. E and 1,240 ft. S of SW cor. Mrs. R. L. Young 1,483-acre tract ..... Drlg. shale 3,527 ft.

The Texas Company's No. 1 Belcher, Manvel, 167 ft. SE of NW line and 223 ft. of NE of SW line, Lot 18, Blk. A, Suburban Gardens Subd. ..... Drlg. shale and lime 4,793 ft.

United Oil Syndicate's No. 1 Levitt, 900 ft. from W line and 400 ft. from S line of John Peske Sur. ..... Drlg. blue shale 600 ft.

BURLESON COUNTY

Reynolds Oil Co.'s No. 1 Harris, 500 ft. from W line and 400 ft. from N line of J. M. McKean Sur. ..... Shut down 400 ft.

F. Marek & Son's No. 1 Marek, N. A. McFaddin Sur., 150 ft. from SE line and 500 ft. from SW line of 84.42-acre tract ..... Drlg. sand and shale 2,386 ft.

Marts et al's No. 1 W. H. Boyett, W. McWilliams Sur., 3,168 ft. N of N cor. of City National Bank 208-acre tract and 300 ft. SE of NW line of Boyett tract.. Drlg. sand and shale 1,382 ft.

J. E. Stubblefield's No. 1 J. B. Mitchell, 81 ft. SW and 4,340 ft. SE of S cor. of Joseph Henson Sur., in A. T. Woolridge Sur. ..... Shut down 518 ft.

FORT BEND COUNTY

Cullen & West and Gulf Prod. Co.'s No. 1-B Lockwood & Sharp, J. Rabb Sur., 300 ft. N and 300 ft. W of NW cor. of A. P. George 200-ac. tract or 600 ft. due W of No. 1-A Lockwood ..... Drlg. gumbo 2,216 ft.

Cullen & West and Gulf Prod. Co.'s No. 2-A Lockwood & Sharp, J. Rabb Sur., 600 ft. N of No. 1-A..... Spudded.

GRIMES COUNTY

Rianjo Oil Co.'s No. 2 Cuthrell, Pat B O'Connor Sur., C of 110-acre tract ..... Clay 96 ft.; cmtd. 10-in. csg.

HARDIN COUNTY

Plummer & McDaniel's No. 1 T. S. Reed, 2,500 ft. from W line and 500 ft. from N line of T.&N.O. Sur. No. 296 ..... Shut down in gumbo and lime 1,326 ft.

D. O. Speight's No. 1 Guedry, 4 miles S of Batson ..... Drlg. shale 4,115 ft.

HARRIS COUNTY

Hattie Baldwin's No. 1 Krahn, 250 ft. out of NW cor. L. Finn Sur. ..... Shut down 492 ft.

Givens & Daybault's No. 1 Lobit, David Middleton Sur., Blk. 19, Lobit Subd. ..... Total depth 902 ft. in sand and clay; set 2 jts. 12½-in. csg.; shut down.

Humble Oil & Ref. Co.'s No. 5 Minnetex, Mykawa, 150 ft. from S line and 200 ft. from W line, Lot 261, Wm. Lovett Sur. ..... Location.

J. P. Hunnicutt's No. 1 Haney, T. Pitching Sur., 150 ft. out of NE cor. of Geo. E. Haney, 730-acre tract .... Location.

JACKSON COUNTY

Chicago Gulf Co.'s No. 1 Rogers, SE cor. of Blk. 14, N. Rodrigues Sur. ..... Total depth 3,952 ft.; cmtd. 6⅝-in. csg. 3,945 ft.

Chicago-Gulf Oil Co.'s No. 9 Drushell, Edna F. Rodriguez Sur., 1,080 ft. N 58° E No. 8..... Derrick.

Francitas Oil & Land Co.'s No. 1 Thrull, 3,260 ft. SW of N cor., P. Green Sur., 540 ft. SE of E bank Carancahua Creek ..... Derrick.

LIBERTY COUNTY

J. R. Ingram's No. 1 C. T. Palmer, James Fenner Sur., 1,000 ft. from W line and 850 ft. from S line of tract.. Drlg. shale 1,976 ft.

Hamm et al's No. 1 Harvard, Davis Hill ..... Gumbo 1,015 ft.; shut down.

Tucker et al's No. 1 Bell, H.&T.C. Sur. No. 4 ..... Shut down 2,970 ft.

MATAGORDA COUNTY

H. C. Cockburn's No. 3 Hawkins, Shepherds Mott, 4,810 ft. SE along SW line of Farnum Fry Sur., thence 242 ft. NE at right angles ..... Total depth 5,034 ft.; drlg. sidetracked hole in heaving shale 4,885 ft.

ORANGE COUNTY

Altex Oil Co.'s (Veteran Oil Co.) No. 1 Reed, A. Nelson Sur. No. 1, 500 ft. from N line and 250 ft. from E line of tract ..... Total depth 4,603 ft.; sidetracked at 1,200 ft.; last depth reported 2,200 ft.

Crew Oil Co.'s No. 1-A Mansfield, 50 ft. E of No. 1 ..... Shut down 1,416 ft.

POLK COUNTY

Freeman et al's No. 2 Freeman ..... Shut down 3,124 ft.

T. B. Hoffer's No. 1 Saner-Ragly Lbr. Co., 300 ft. out of most northerly cor. of most easterly County School Land Abst. 271 ..... Derrick.

Sunshine Oil Co.'s No. 1 Olliver, A. Viesca Sur., 600 ft. NE along SE line from S or SW cor. of 50-acre tract and thence 200 ft. NW at right angles ..... Rig.

Trans-Coastal Oil Co.'s No. 1 M. E. Roberts, J. F. Rumayor Sur., 350 ft. from W line and 150 ft. from N line of tract ..... Drlg. water sand 734 ft.

REFUGIO COUNTY

Blanco Creek Oil Co.'s No. 1 Damaan, 150 ft. from N line and 150 ft. from W line of Blk. 16, Bonnie View Ranch Subd. ..... Standing 4,263 ft.

Humble Oil & Ref. Co.'s No. 1 O'Connor, John Keating Sur., 6,012 ft. S from NE cor. along SE line of Lon T. Rios Sur., thence 7,375 ft. W at right angles in John Keating Sur. ..... Cmtd. 20-in. surface pipe 106 ft.

TYLER COUNTY

King Oil Co.'s No. 1 Caswell ..... Sand and shale showing oil 1,255 ft.; cmtd. 6-in. csg. 1,218 ft.

Allied Pet. Co.'s (Texas Southern Pet. Co.'s) No. 3 Wilson, Mrs. E. Cherry Sur. No. 798, 1,500 varas from W line and 600 varas from N line ..... Drlg. shale 4,969 ft.

VICTORIA COUNTY

Houston Oil Co.'s No. 1 Conrad, T.&N.O. Sur. No. 1, 1,100 ft. from SW line and 100 ft. from NW line ... Drlg. sandy shale showing gas 5,003 ft.

The Texas Company's No. 3 McFaddin, S 15° W., 6,200 ft. and N 75° W 1,850 ft. out of NE cor. John M. Rine Sur. ..... Drlg. sand and shale showing gas 3,332 ft.

United Prod. Corp.'s No. 5-A McFaddin, 4,250 ft. N along extended E line of C. L. Mann Sur., in Maria Traviesa Sur. ..... Derrick.

WALLER COUNTY

McDaniel and associates' No. 1 Citizens State Bank, B.B.B.&C. Sur., C of 150-acre tract ..... Rig.

WASHINGTON COUNTY

Joe Baker et al's No. 1 Kramer, Brenham, 600 ft. S and 300 ft. W NE cor. 92 acres ..... Dry and abd. 4,100 ft.

Penn-Tex Oil Co.'s No. 2 Kamas Brenham, S. M. Williams Sur. ..... Shale 3,286 ft.; set 1,000 ft. of 8-in. pipe.

SOUTH LOUISIANA
CALCASIEU PARISH

Crawford Doyle's No. 1 Johnson, Sec. 23-9s-13w ..... Shut down 875 ft.

I. O. Davis' No. 1 Industrial, Sec. 29-9s-10w ..... Standing 6,568 ft.

Wilfred Lahay's No. 1 Jardell, Sec. 16-10s-12w ..... Shale 3,265 ft.; preparing to resume drlg.

Dr. Thomas et al's No. 1 John Hewitt ..... Location.

Vacuum Oil Co.'s No. 1 Wait (D.D.), 225 ft. out of SE cor. Sec. 12-9s-7w ..... Sand showing oil 6,961-79 ft.; cmtd. 7-in. csg. and 1 jt. screen; drlg. plug.

CAMERON PARISH

Vacuum Oil Co.'s No. 2 Cameron Meadows, 3,120 ft. S and 1,900 ft. W from NE cor. Sec. 21-14s-9w (500 ft. S No. 1) ..... Total depth 4,312 ft.; drlg. sidetracked hole in hard sandy lime 3,732 ft.

The Texas Company's No. 7 State, Calcasieu Lake ..... Location.

IBERIA PARISH

Jefferson Lake Oil Co.'s No. 20 Lake Peigneur, 300 ft. N No. 3 and 300 ft. W No. 11, Sec. 58-12s-5e..... Cap rock 559-631 ft.

Jefferson Lake Oil Co.'s No. 21 Lake Peigneur, Sec. 58-12s-5e, 300 ft. NW of No. 20 ..... Rigging.

IBERVILLE PARISH

Standard Oil Co.'s No. 1 Myrtle Grove-Wilbert, Bayou Choctaw, Sec. 52-9s-11e 250 ft. W No. 1 Gay ..... No report.

Standard Oil Co.'s No. 7 Wilbert, Bayou Blue ..... Derrick.

Standard Oil Co.'s No. 6 Schwing, Bayou Blue, Sec. 73-9s-11e, 317 ft. S of No. 2 ..... Drlg. 3,746 ft.

Standard Oil Co.'s No. 7 Schwing, Bayou Blue, Sec. 74-9s-10w, N 45°, W 1,800 ft. from No. 5 ..... Total depth 1,350 ft.; sand showing oil 1,307-12 ft.; shut down pending completion No. 6.

PLAQUEMINES PARISH

Humble Oil & Ref. Co.'s No. 2 State, Lake Grand Ecaille, Sec. 14-20s-26e ..... Drlg. 12-in. csg. plug 635 ft.

TERREBONNE PARISH

The Texas Company's No. 1 La.L&E., Bay St. Elaine ... No report; previous report drlg. shale 5,700 ft.

The Texas Company's No. 3 La.L&E., Bay Junop ..... Location.

The Texas Company's No. 4 La.L&E., Bay Junop ..... Location.

The Texas Company's No. 6 State, Lake Barre ..... Salt 3,848-4,001 ft.; sidetracked to sand showing oil 3,782 ft.; cmtd. 9⅝-in. csg. on bottom.

The Texas Company's No. 10 State, Lake Barre ..... Location.

The Texas Company's No. 11 State, Lake Barre ..... Derrick.

The Texas Company's No. 12 State, Lake Barre ..... Location.

The Texas Company's No. 14 State, Lake Barre ..... Location.

The Texas Company's No. 6 State-Lake Pelto (D.D.), 1,650 ft. N and 670 ft. W from SE cor. tract, Sec. 8-23s-18e ..... Pulling screen to deepen 1,355 ft.

VERMILION PARISH

Pure Oil Co.'s No. 1 Alliance Land, Sec. 34-11s-1w, 2,600 ft. N and 300 ft. E of SW cor. section ..... Hardy, sandy lime and calcite 6,185 ft.; fishing rock bit cores.

Pure Oil Co.'s No. 2 Southwest Louisiana Land Co., 1,300 ft. E and 300 ft. S of NW cor. Sec. 4-12s-1w ... Location.

WEST FELICIANA PARISH

Putnam Syndicate's No. 2 Como Plantation, Sec. 51-1s-4w. Shale and lime 2,050 ft.; waiting on 8¼-in. csg.

SOUTHWEST TEXAS FIELDS

(Continued from Page 56)

and others' No. 1 Sue Denman, a mile southwest of the Darst Creek Field, has spudded in and set surface casing.

Edwards Plateau

There is a possibility that Evans & Gant's No. 1 Love in southwestern Kerr County may be carried to the Ellenberger. It is now standing at 4,060 feet. After No. 1 Love made a small well at 3,391 feet the idea has been in financing tests to go 4,000 feet. Of the seven tests in western Kerr and eastern Real Counties, four have passed 4,000 feet and are shut down. No. 1 Love, discovery well, is standing at 4,060 feet; No. 1 Marcus Auld, 5 miles northwest, at 4,185 feet has been abandoned; No. 1 Dan Auld, 3½ miles southwest, abandoned at 4,010 feet, and No. 1 Seiker-Mears, 3 miles northeast, shut down at 4,031 feet. All of them stopped in the Pennsylvania. Of the other three tests No. 1 Haby, 7 miles southeast of No. 1 Love, is hauling in casing at 2,500 feet because of caving formation; No. 1 Young, 6½ miles north of No. 1 Love, is standing at 1,310 feet, and No. 2 Love, a mile southeast of No. 1 Love, is standing at 450 feet.

All of the 4,000-foot tests have encountered plenty of sand thickness but have seemed to be off structure. The idea now is to drill to the Ellenberger and undoubtedly such an act would be welcome news to geologists who would like to know how thick the Pennsylvania is in that part of the Edwards Plateau.

Pettus District

With the exception of one test in Austin County, 6 miles west of Raccoon Bend Pool, which is standing at 1,500 feet, the Southern Crude Oil Purchasing Co. and V. F. Neuhaus' No. 1 Pettus in Goliad is the only test listed in the 125 miles from the Raccoon Bend Pool to the Pettus Pool.

The drilling campaign around J. M. Davis' (Da-Mac Oil Co.) No. 1 Ray in the Pettus Field may be delayed till fall. T. B. Slick estate has location made for an east offset. Davis' No. 1 Ray has been pinched down to about 100 bbls. and may be pinched down still more if it will stand it. This leaves the United Production Co.'s No. 39 Ray on the east end of the field drilling at 3,032 feet the only active test. Mauldin's No. 1 Kimble, 7 miles west, which has been standing for some time at 3,544 feet, has started working again in an effort to coax it into a producer.

The only progress in the Cartwright or Mount Lucas Pool in southeastern Live Oak County is that the Houston Oil Co.'s No. 14 Cartwright has made more hole and is now down 4,650 feet, nearly 1,100 feet deeper than the production in No. 23 Cartwright, 100 feet east of it, and without production. Catlett & O'Neill, 4 miles north, finished the fishing job and are now down 4,460 feet and seem to have found nothing encouraging.

Corpus Christi Area

Welder Oil Corp. got a dry hole in its No. 1 Welder, 15 miles north of the White Point Field in San Patricio County at 3,704 feet. It is the first test drilled in that area since the Aransas Oil Corp. brought in its No. 1 Welder as a big gas well and discovery well at 3,634 feet. The new test was 1,500 fet away. Also in the White Point Field United Production Co.'s No. 1 Mayfield is dry and abandoned at 3,283 feet.

CALIFORNIA FIELDS

(Continued from Page 62)

be content to let the matter stand at least for the present.

The Standard Oil Co. added a new well to its list of producers in the West Coyote Field of Los Angeles Basin when No. 48 Emery was brought in on the beam pumping 194 bbls. of 25.6 gravity oil per day from 4,320 feet. The Standard is also expected to finish Nos. 106 and 107 on the Murphy-Coyote lease in this field within 10 days and unless something unforeseen develops No. 49 Emery will be finished shortly thereafter. In the Santa Fe Springs the Union completed No. 62 Bell, a new well pumping 50 bbls. of 32.7 gravity oil from the Bell zone at 4,458 feet. At Playa Del Rey, the Union is abandoning No. 9 Townsite as a duster at 6,060 feet as both the Del Rey and Recreation zones and Schist in this area were unproductive. The International Petroleum Corp. is building rig for No. 4 Venice, the first new well to be started in the Playa Del Rey Field for several weeks. Another is expected to be started in the near future, as the Herndon Petroleum has tentatively staked location for a new well to be drilled on the Dickinson & Gillespie lease a little over 1,000 feet south of the Union Oil Co.'s No. 1 Vidor, completed a month or two ago and subsequently suspended without being given a production test. The Standard is expected to drill out the cement in its No. 1 Irvine, a deep test in the Newport Field of Los Angeles Basin within a few days. The outcome will be watched with considerable interest because of the oil and gas showings and Acetone cuts which the formation showed just previous to the landing of pipe at 4,630 feet. As a result of the showings found in this area by the Standard, the Superior Oil Co. has leased several hundred acres 2 miles south of the Standard's test and the Mesa Petroleum Corp. resumed operations on its 4,910-foot well approximately 3 miles northwest of the Standard's No. 1 Irvine.

CANADIAN FIELDS

(Continued from Page 59)

off showed a flow of 37,000,000 feet with 1,020 pounds rock pressure. It is reported that arrangements are being made for drilling another well on the same structure. Range's No. 2 in LSD 6, Section 21-1-11w4, was drilled some years ago to 1,940 feet, but geological investigation indicated it was poorly located, and the new test will likely be placed in a different direction from the discovery well.

Turner Valley Prorating

Following the action of the Alberta government in curtailing Turner Valley gassers to 40 per cent of open flow, the provincial government has retained Frank P. Fisher, consulting engineer of Mount Vernon, Ohio, to further investigate the problem of gas wastage.

Imperial Drilling

In the South Turner Valley, Imperial Oil, Ltd., reports two tests still active. Southern Lowery's No. 3, LSD 4, Section 9-19-2w5, is drilling at 4,901 feet. Sterling Pacific Oil Co.'s No. 2, LSD 10, Section 33-18-2w5, is drilling at 2,728 feet. South West Petroleum Co.'s No. 2, Section 8-19-2w5, is still standing at 5,407 feet. There is some uncertainty as to the future of this test, which is in the same section as South West's No. 1. The latter was finished last year at 6,504 feet and has been making around 65 bbls. a day.

South Turner Valley

In the Mercury area, South Turner Valley, Hylo Oils' No. 1, LSD 12, Section 4-19-2w5, is drilling in the lower Alberta shales below 3,125 feet after encountering a small oil show, and after cementing 13⅜-inch at 2,670 feet is planning to carry 12½-inch open hole to 4,000 feet, aiming to enter the producing horizon with as large a hole as possible.

Red Coulee Producer

On the Montana end of the international Red Coulee structure, Askalta Oils' No. 1 Farbo, SE SE NE Section 2-37-4w, south of Vanalta Oils' No. 1 producer and about a half mile south of the international boundary, is reported to indicate a big producer. The well got production in what is stated to be the Cosmos sand at 2,505 feet and blew in with an initial flow reported at 68 bbls. an hour. Pumping on a prorated basis it is stated to be making around 300 bbls. a day. It is a north offset to Cosmos-Iowa No. 1, the first large well on the Montana side. Alberta Drillers No. 1 Farbo, SE Section 3-37-4w, about a mile further west, is reported drilling around 2,500 feet after getting a gas show in the Sunburst sand.

Hudson's Bay Tests

In the Keho Lake area, southern Alberta, Hudson's Bay Oil & Gas Co.'s No. 1 Keho, LSD 2, Section 17-11-22w4, is at 4,325 feet and has run into additional caving, and is now standing cemented.

In the Castor district, Hudson's Bay's No. 1 Paintearth, LSD 5, Section 27-39-15w4, is drilling below 4,650 feet with salt water showing in the Devonian lime.

Moose Mountain Test

Following a conference of shareholders and leasholders interested in the Moose Mountain structure northwest of the Turner Valley Field, arrangements are being made for completion of Signal Hill Oil Co.'s No. 2, LSD 9, Section 34-23-5w5, by Graystone Consolidated Petroleums, Ltd., in order to secure a definite test of the Moose Mountain structure.

Cypress Hill Operations

It is reported that Eagle Butte Oil Co. is resuming operations in the Cypress Hill area, in southeastern Alberta near Medicine Hat. Eagle Butte's No. 1, drilled some time ago in LSD 3, Section 31-7-4, got a strong gas flow at around 3,340 feet and later drilled into water. The test is being cleaned out to 3,956 feet and will attempt a shutoff. Renewal of activity is understood to be related to extensive pipe line activities in northern Montana which are likely to require gas from the Alberta fields and are planning to supply some markets in Saskatchewan and Manitoba.

East Central Alberta

In the Ribstone Field, East Central Alberta, Commonwealth-Algonquin's No. 2, LSD 5, Section 16-45-1w4, is drilling below 1,800 feet and expected to get the oil sand at 1,900 feet. Some gas has been encountered.

Saskatchewan Test

In eastern Saskatchewan, Simpson Oil Co.'s No. 1, Section 9-29-25w2, near Simpson, is reported down about 3,000 feet and about 2 feet in an oil sand. Some water was encountered and the test is to be deepened. The oil was encountered in a limestone formation.

Ontario Drilling

In Norfolk County, Ontario, Tillsonburg Oil & Gas Co.'s No. 2 on the Isaac White farm, southeast of Tillsonburg, has been shot in the gas sand at 1,250 feet, securing a gas production somewhat larger than No. 1, finished a few weeks ago. The outfit will be moved to a new location for a third test. Acme Gas & Oil Co. is continuing development work in the Tillsonburg area, and Dominion Natural Gas Co. is enlarging its lines to handle the production.

In Raleigh Township, Kent County, Olga Oil & Gas Co.'s No. 1, SW, Lot 20, Concession 8, is drilling around 1,800 feet after securing some sweet gas production in the upper sands.

In the D'Clute Field, Union Natural Gas Co.'s No. 19, NW, Lot 16, Concession 15, Raleigh Township, was drilled to 1,647 feet and plugged back to 1,450 feet. A sweet gas show at 1,430 feet was shot, developing a production around 300,000 feet.

In Harwich Township, Kent County, Frank H. Stover & Son's No. 1 wildcat near McKay's Corners failed to get production in the upper horizons and is being continued as a test of the Trenton limestone. The test got the top of the Trenton at 3,017 feet, and is drilling in the lime at 3,150 feet.

In Dawn Township, Lambton County, Union Natural Gas Co.'s No. 60, NE, Lot 25, Concession 1, finished a dry hole at 2,090 feet, and is being plugged and abandoned. No new work has been started in this field.

LA.-ARK. FIELDS

(Continued from Page 55)

test at 2,965 feet resulted in 1,800 feet of salt water in 15 minutes. The Gulf Refining Co.'s No. 1-A Bodcaw Lumber Co., Section 4-10-5w, in Winn Parish, cored hard gray sand from 3,960-74 feet.

Deep Tests Disappointing

The week's report on three deep tests, one in the proven area and two wildcats, seem destined as failures. The Ark-La Pipe Line Co.'s No. 14 Werner, B. C. Jordan Survey, in the Bethany Field of Panola County, has failed to get a good gas well from the usual paying depth of that field. Bailing was begun at 4,718 feet and tests made at other depths after coring, but only a small amount of gas has been encountered with large quantities of salt water. The well is now coring in lime and shale at 4,894 feet. The Ryan Consolidated Petroleum Corp. set 6-inch at 5,282 feet on its No. 1 Key, E. Carroll Survey, and it is understood that the operators have reached the contract depth of 5,300 feet with no show of oil or gas. The Lion Oil Refining Co.'s No. 1 G. P. Hayes, Section 4-16-15, a deep test in the Smackover Field of Union County, Arkansas, has reached the contract depth of 5,000 feet without encountering a worthwhile show. The total depth of the well is 5,021 feet, and it is understood that the co-operation of the local business interests of El Dorado is being enlisted to drill deeper.

Daily Average Production

There was a net decrease of 1,270 bbls. in the daily average runs from the North Louisiana and Arkansas Fields, the former losing 945 bbls. and the latter 325 bbls. Daily average runs for the several pools were:

NORTH LOUISIANA

Caddo, light	6,260
Caddo, heavy	1,745
Homer	2,870
Haynesville	5,190
DeSoto and Red River	2,485
Elm Grove	470
Cotton Valley	330
Urania	3,740
Pleasant Hill	375
Sarepta-Carterville	940
Zwolle	6,555
Holly	455
Total North Louisiana	31,415
Total previous week	32,360
Decrease	945

ARKANSAS

El Dorado	3,200
Smackover, light	3,220
Smackover, heavy	27,035
Stephens	540
Nevada	1,060
Lisbon	520
Champagnolle	2,480
Urbana	250
Total Arkansas	38,305
Total previous week	38,630
Decrease	325
Total both states	69,720
Total previous week	70,990
Decrease	1,270

KANSAS FIELDS

(Continued from Page 54)

Morris County, Allender and others' No. 1 Wycoff, C SW SE Eection 5-17-7, is rigging up. Yarnell & Shell Petroleum Corp.'s No. 1 Gouldner, C NW SE. Section 22-18-9w, Rice County, was also rigging up.

In Goodrich Pool, in Sedgwick County, Continental Oil Co.'s No. 1 Black SW cor. SE NW, Section 16-25-1, an old well that has been producing from the chat at 3,008-12 feet, is rigging up to drill deeper. The production has declined to a few barrels a day and it will be drilled to the Simpson sand. The Continental Oil Co. owns practically all the proven acreage in the area and most of the leases will expire next spring.

Butler County

Flint Hill Oil & Gas Co.'s No. 1 Martin, CWL NW NE, Section 27-28-4, is spudding.

Chautauqua County

Leighty and others' No. 1 Lemert, SE cor. NE, Section 36-34-9, has been completed for 1,300,000 feet of gas in sand 855-59 feet.

Cowley County

Deal and others' No. 1 Brooks, NW cor. SW SE, Section 20-31-6, is dry and abandoned at 2,917 feet. Home Natural Gas Co.'s No. 1 Corn, C SE SE, Section 13-33-5, has been completed for 200,000 feet of gas in sand 612-17 feet.

Franklin County

Fielder & Whiteside have the rig up for No. 1 Huddleston, NE cor. NW, Section 30-16-17.

McPherson County

Darby Petroleum Corp. is moving in tools for No. 1-C Fletcher, SW cor. SE SW, Section 16-19-1w, Ritz-Canton area. Twin Drilling Co., Phillips Petroleum Co. and Shell Petroleum Corp.'s No. 1 Gratton, SW cor. SE, Section 19-19-1w, is cleaning out to deepen from 2,966 feet. Darby Petroleum Corp. and Shell Petroleum Corp.'s No. 3 Kaegi, SE cor. NE, Section 20-19-1w, is moving in.

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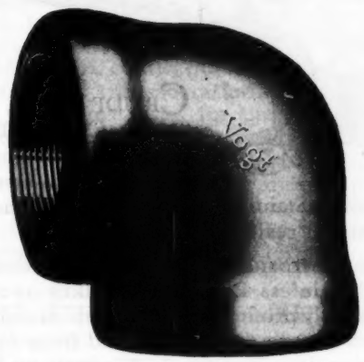

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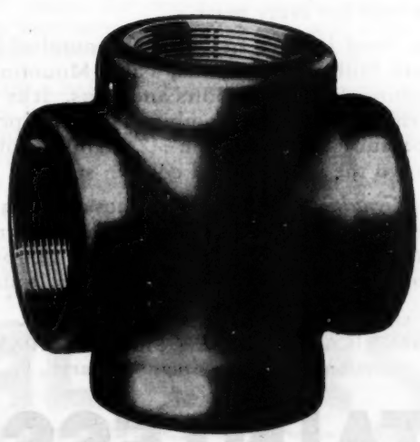

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Dieter, Youker and Shell Petroleum Corp.'s No. 2 Sellers, NW cor. SW, Section 19-19-1w, is moving in tools. Smith, Ash and Shell Petroleum Corp. made location for No. 2 Kaegi, NE cor. NW NW, Section 21-19-1w. Shawver and Shell Petroleum Corp. staked location for No. 1 Lively, SW cor. NW, Section 21-19-1w. Mid-Kansas Oil & Gas Co. made location for No. 2 Unruh, SW cor., Section 25-19-2w. Stanolind Oil & Gas Co. and Amerada Petroleum Corp.'s No. 4 Flook, NW cor., Section 1-20-2w, has drilled deeper from 2,958 feet to 2,969 feet and now testing. Twin Drilling Co., Phillips Petroleum Co. and Shell Petroleum Corp.'s No. 2 Gratton, SE cor., Section 19-19-1w, swabbed 673 bbls. of oil in 12 hours from Viola lime 3,414-29½ feet. McPherson Oil & Gas Development Co. and Shell Petroleum Corp.'s No. 2 Lovett, C SW NW, Section 13-19-2w, made 10,750,000 feet of gas in chat 2,900-40 feet. Lario Oil Co. and Shell Petroleum Corp.'s No. 2 Suffield, SW cor. SE, Section 25-19-2w, topped Viola lime at 3,384 feet, drilled to 3,394 feet and was completed for potential of 1,243 bbls. Mid-Kansas Oil & Gas Co.'s No. 1 Unruh, SE cor. SW, Section 25-19-2w, has been completed for potential of 1,726 bbls. from Viola lime 3,387-97 feet.

Rice County

McFadden and Shell Petroleum Corp.'s No. 2 Jennings, CSL NW NW, Section 29-18-6w, has been completed for 33,600 feet of gas in sand 1,156-65 feet, total depth 1,185 feet.

Sedgwick County

Derby Oil Co.'s No. 5 Eastborough, NE cor. SW NE, Section 19-27-2, Eastborough Pool, is rigging up to deepen from 2,971 feet. Magnolia Petroleum Co.'s No. 5 Wheeler, SE cor. SW NE NE, Section 19-27-2, is rigging up to deepen from 2,967 feet. No. 6 Wheeler, NE cor. NW SE NE, Section 19-27-2, is a rig under construction. Shell Petroleum Corp.'s No. 2-A Lygrisse, NE cor., Section 15-26-2, has been completed for 832 bbls. on pump, producing from Viola lime 3,155-57 feet. Derby Oil Co.'s No. 1 Rimel, NW cor. NE NE, Section 30-27-2, an old well deepened to 3,379 feet, has been plugged back to 3,250 feet and completed for 160 bbls. from sand 3,231-33 feet. M. R. Buck and others' No. 1 McManaman, NE cor. NW NW, Section 2-29-1, is dry and abandoned at 3,608 feet.

Stevens County

Saxet Corp. is drilling a water well in preparation for No. 1 Paden, C SE, Section 19-33-36w. Texas Interstate Pipe Line Co. and others' No. 1 Spikes, C NE, Section 2-33-38w, has been completed for 3,800,000 feet of gas in sand 2,540-2,790 feet.

Russell County

Billings and others' No. 1 Witt, NW cor. SW SE, Section 4-14-15w, is a rig going up.

OKLAHOMA FIELDS

(Continued from Page 50)

down order. The well opens new territory for development on the west side of the field and adds to prospective acreage to the pool. The offset acreage to the extension well is owned by the Indian Territory Illuminating Oil Co. and Tom Slick Oil Co. with some small tracts that have been platted. Attempts have been made to unitize the acreage around the well. The well was the Phillips Petroleum Co. and Shell Petroleum Corp.'s No. 1 Egermier, SW cor., Section 23-11-3w, on the west side of the Oklahoma City Field. The Shell Petroleum Corp. leased the SW Section 23-11-3w, and drilled a well in the northeast corner of the acreage and reserved the 10 acres around the well and turned the 150 acres to the Phillips Petroleum Co. to drill two wells.

Week's Completions

During the week the following wells were completed in the Oklahoma City Field: Spring Rose Drilling Co.'s No. 1 O'Conner, SW cor. NW NW, Section 2-11-3w, was estimated to be a 90,000,000-foot gas well from a total depth of 6,390 feet. The well was formerly owned by Cunard Oil Co. and was taken over by the present operators in June. It was shut in without testing and will be opened later. Tom Slick Oil Co.'s No. 3 Central, SE cor., Section 3-11-3w, was completed making 11 bbls. of oil in three hours and an estimated 12,000,000 feet of gas a day from a total depth of 6,335 feet. The well may be drilled deeper or shot in an attempt to increase its production. Tom Slick Oil Co.'s No. 2 Whitfield, NW cor. NW SE SE, Section 34-12-3w, on the north edge of the producing area, flowed 1,869 bbls. of oil the first hour. The gas was estimated at 35,000,000 feet a day. The total depth of well is 6,435 feet and the 6-inch casing was landed at 6,279 feet.

Gross Underproduction

According to the field umpire, Otto Bradford, the underproduction of the Oklahoma City Field, on wells that have been gauged for potential production, totaled 2,499,450 bbls. of oil at the beginning of the August period. There was a gross underproduction of 3,714,010 bbls. of oil and an overproduction of 1,214,560 bbls. The potential of the Oklahoma City Field on July 1 was 8,395,241 bbls. of oil a day. The actual production for July was 4,962,687 bbls. The total pipe line shipments for July were 4,849,258 bbls. The Champlin Refining Co. had a total overproduction of 474,413 bbls. of oil as of August 1.

New Tatums Producer

During the week another producer was added to the Tatums Pool, Carter County in southern Oklahoma, and another was expected to be completed when the shutdown order went into effect. Carter Oil Co., Cox & Hamon's No. 1 Spraggins, NW cor. SW, Section 19-1s-2w, was completed and swabbed 217 bbls. of oil the first 24 hours. The well was shut in for proration. The production was found from 1,780-1,965 feet. Magnolia Petroleum Co.'s No. 5 Dickerson, NE cor. SE, Section 24-1s-3w, on the edge of production on the east side of the field. cemented casing at 1,969 feet. A showing of oil was found in sand from 1,969-81 feet. The operators expect to drill deeper into the sand before completing the well. K. D. Oil Co. and Frank Gouin's No. 1 M. E. Burton, C S half SW Section 30-1s-2w, a half mile south of production, has cemented casing at 2,216 feet. A showing of oil was found in broken sands between 2,220-2,400 feet. It is shut down for the usual proration period in the field. Carter Oil Co.'s No. 4 Wirt Franklin, C NE NE, Section 24-1s-3w, was a new rig.

In Stephens County one drilling test nearing the pay horizon was delayed by casing trouble. H. J. Brown and K. D. Drilling Co.'s No. 1 Hightower, SW cor. SE NE, Section 15-3s-5w, has been recemented after a showing of gas was found in sand at 930-45 feet. J. C. Chambers and others' No. 1 Dare, NW cor. SE, Section 2-2s-8w, was a new location on the north side of Comanche Field.

Other Operations

In the Kingston area in Marshall County, McCrory and others' No. 1 Whitworth, SW cor. SE, Section 24-7s-5, three quarters of mile from production in the shallow Kingston area, was shut down at 205 feet.

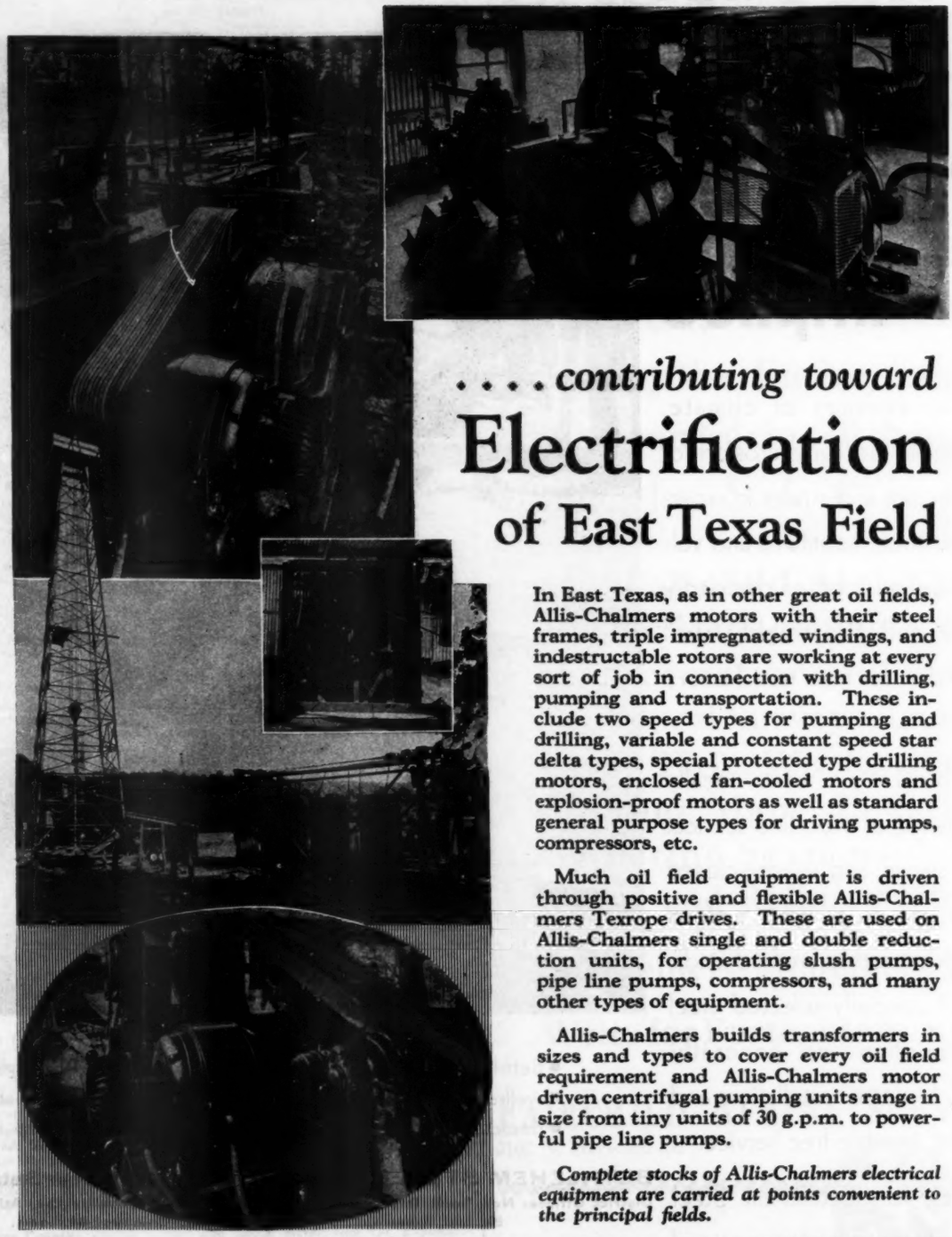
In Love County, Batson, Starritt & Autry's No. 2 Autry, SE cor. NE, Section 27-6s-2, shut down to repair a boiler at a total depth of 1,335 feet, in sand where a showing of oil was found. It was topped at 1,324 feet. Operations were expected to be resumed during the week. Same operators No. 1 Cross, NE cor. NW NE, Section 27-6s-2, was a location.

In Atoka County, Stewart & Whelan's No. 1 Howard, NW cor. SE NW, Section 6-4s-11, a wildcat test, was drilled to a total depth of 1,660 feet without finding oil or gas and was abandoned.

A wildcat test in Coal County, McCraw and others' No. 1 Ward, NE cor. SE, Section 35-1-8, has cemented casing at 1,765 feet. A showing of oil and gas was found at 1,846 feet, which will be tested.

Greater Seminole Production

The production from the Greater Seminole area for the week ending August 7, was approximately 140,808 bbls. The first 12 pools listed below comprise the



. . . . *contributing toward*

Electrification of East Texas Field

In East Texas, as in other great oil fields, Allis-Chalmers motors with their steel frames, triple impregnated windings, and indestructable rotors are working at every sort of job in connection with drilling, pumping and transportation. These include two speed types for pumping and drilling, variable and constant speed star delta types, special protected type drilling motors, enclosed fan-cooled motors and explosion-proof motors as well as standard general purpose types for driving pumps, compressors, etc.

Much oil field equipment is driven through positive and flexible Allis-Chalmers Texrope drives. These are used on Allis-Chalmers single and double reduction units, for operating slush pumps, pipe line pumps, compressors, and many other types of equipment.

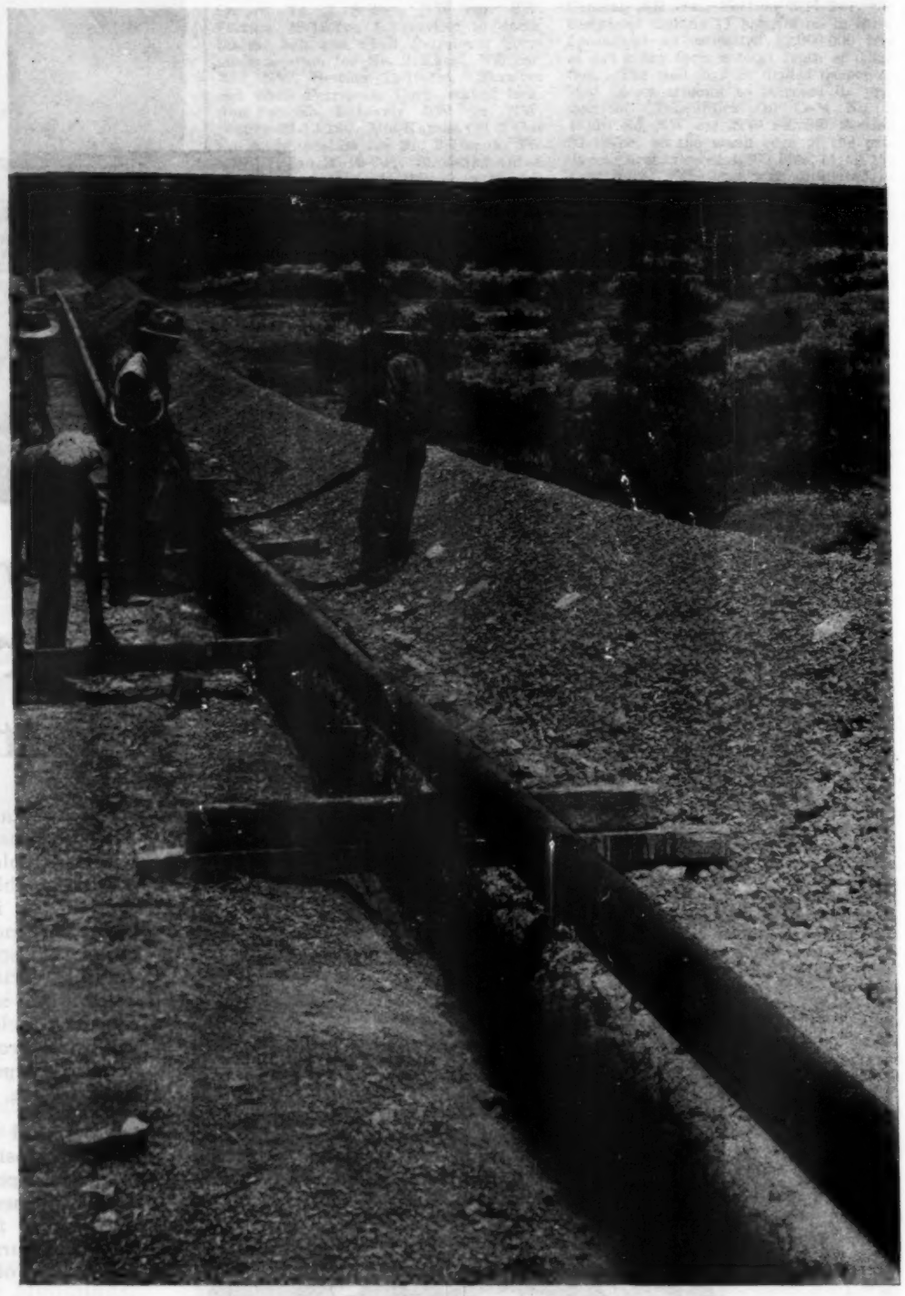
Allis-Chalmers builds transformers in sizes and types to cover every oil field requirement and Allis-Chalmers motor driven centrifugal pumping units range in size from tiny units of 30 g.p.m. to powerful pipe line pumps.

Complete stocks of Allis-Chalmers electrical equipment are carried at points convenient to the principal fields.

ALLIS-CHALMERS

Allis-Chalmers Manufacturing Company, Milwaukee

What Service in Pipe Lines Implies



Subjected to extremes of climate, severe chemical action, erosion of soils, and stresses and strains in crossing rivers, marshes, mountains and valleys, line pipe must be of decidedly high quality and thoroughly well made in order to give satisfactory service.

Bethlehem Steel Pipe meets ideally the requirements of pipe-line service. It has tight, strong and solidly-closed welds. It comes in straight, uniform sections with smoothly-finished ends. It is made of specially-selected steel whose composition and generally high quality facilitate installation and promote long, trouble-free service.

You can rely on Bethlehem Steel Pipe. It reflects the experience gained during more than half a century devoted to the manufacture of good steel and steel products. Oil and gas companies are using it to an ever increasing extent.

■ Bethlehem maintains at Houston, Texas, and Wilmington, California,
■ well-assorted stocks of line-pipe, ready for immediate shipment. Both
■ threaded and coupled and plain-end pipe are included in these stocks

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District Offices: New York, Boston, Philadelphia, Baltimore, Washington, Atlanta, Pittsburgh, Buffalo, Cleveland, Cincinnati, Detroit, Chicago, St. Louis.

Pacific Coast Distributor: Pacific Coast Steel Corporation, San Francisco, Los Angeles, Seattle, Portland, Honolulu.

Export Distributor: Bethlehem Steel Corporation, 25 Broadway, New York City.

BETHLEHEM STEEL PIPE

Seminole area which averaged 100,760 bbls.

Pool—	Bbls.
Little River	18,255
East Little River	4,285
Carr City	10,095
Maud	2,215
Mission	6,710
Bowlegs	11,285
Earlsboro	12,795
South Earlsboro	3,735
East Earlsboro	12,965
Seminole	13,875
East Seminole	1,155
Searight	3,390
Total	100,760
Allen	9,980
Asher	605
Wanette	5,110
Konawa	7,998
Sasakwa	1,970
St. Louis-Pearson	14,385
Total	140,808

Oklahoma City Shipments

The total shipments from the Oklahoma City Field for the week ending August 8 were 529,681 bbls., including tank cars. The shipments increased 52,130 bbls. from the previous week. The shipments by companies were as follows:

Company—	Bbls.
Champlin	68,272
Continental	63,424
Empire	103,466
Magnolia	44,762
Oklahoma	11,564
Operators	33,416
Shell	5,966
Stanolind	53,541
Sinclair	73,897
I. T. I. O.	20,532
Crude P. L.	7,208
Petroleum P. L.	15,314
Century	13,692
Wilcox	14,627
Total	529,681

The daily production and pipe line shipments from the Oklahoma City Field for the week ending August 8, were as follows:

Date—	Prod.	Wells	Shipments
August 2	164,860	74	78,482
August 3	72,952	44	98,236
August 4	166,895	78	117,620
August 5	94,696	73	70,831
August 6	1,184	11	76,683
August 7	1,626	14	50,855
August 8	4,052	14	24,427

Atoka County

L. E. Stewart and others' No. 1 M. Howard, NW cor. SE NW, Section 6-4s-11, has been abandoned at 1,660 feet.

Carter County

Carter Oil Co. and others' No. 1 Ratliff, NW cor. SW, Section 19-1s-2w, has been completed for 217 bbls. on swab from broken sand 1,780-1,926 feet.

Coal County

E. M. Whitney and others' No. 1 Miller, SE cor. NE, Section 10-2-8, is dry and abandoned at 760 feet.

Grady County

Badgett & Cooper's No. 2 Milner, SE cor. NW SE SE, Section 23-4-8w, lost the hole and was abandoned at 2,048 feet.

Hughes County

Boettecher and others' No. 1 Schramm, C SE NW, Section 11-7-8, has been completed for 41,000,000 feet of gas in sand 2,957-74 feet.

Creek County

Westfall Drilling Co.'s No. 1-A McGee, SE cor. SW SW, Section 25-19-8, is rigging up.

Muskogee County

John Aggas' No. 6 M. Hawkins, SW cor. NW SE, Section 28-16-15, has been completed for 500,000 feet of gas in sand at 1,422 feet after drilling deeper to 1,508 feet and plugging back. J. G. Graham's No. 5 N. Stidham, SW cor. NE SE NE, Section 11-14-18, is a dry hole at 1,076 feet.

Okfuskee County

Keaton & Gold's No. 1 L. Harjo, SE cor. SW, Section 7-12-11, is a rig under construction.

Oklahoma County

Indian Territory Illuminating Oil Co. and Phillips Petroleum Co.'s No. 1-B, M.K.&T., CNL SW SE SE, Section 34-12-3w, Oklahoma City Pool, made 5,539 bbls. in 3 hours and 10 minutes from a total depth of 6,427 feet. Phillips Petroleum Co.'s No. 1 Reserve, NW cor. NE, Section 3-11-3w, flowed 7,181 bbls. in 4 hours from sand 6,312-6,491 feet, flowing through a 4-inch choke. Skelly Oil Co.'s No. 1 Gibson, SW cor. NW SW NE, Section 10-11-3w, topped Wilcox sand at 6,285 feet, base of sand 6,449 feet, total depth 6,451 feet, making 2,670 bbls. in 1½ hours. Indian Territory Illuminating Oil Co. and others' No. 3 Ivanhoe, NW cor. SE NE, Section 15-11-3w, made 2,467 bbls. in 4 hours and 58 minutes at total depth of 6,395 feet.

Payne County

W. M. Mote and others' No. 1 School Land, NW cor., Section 36-17-5, is a rig on the ground.

BLODGETT IS MANAGER OF CALIFORNIA AGENCY

LOS ANGELES, Calif., Aug. 8.—At the regular weekly meeting of the board of directors of the Oil Producers Sales Agency in Los Angeles, Rush M. Blodgett was elected general manager of the agency and R. A. Broomfield, vice president, to succeed Neal H. Anderson, resigned, who was elected recently state oil umpire. The new officials have been directors of the agency since its inception.

Mr. Broomfield is president of the Barnsdall Oil Co. of California and Mr. Blodgett is vice president and general counsel of the Getty oil interests in California, New Mexico, Oklahoma and Texas.

"Conditions in the oil industry are slowly but surely improving," said Mr. Blodgett. "As the public comes daily to a clearer understanding of our problems, we feel surer of our steps at stabilization. The various groups which have given helpful publicity and assistance have cleared away many of our difficulties.

"There will be no change of policy on the part of the agency. I appreciate the honor which has been conferred upon me, but I am also sensible of the enormous responsibility. Any man or group of men attempting to aid in adjusting the results of modern machine efficiency to age-old economic laws attempts a serious task.

"The agency whether representing a part, or all of the production of the State, must act in all respects as a servant of the industry as a whole, and as a wheel in the entire economic structure.

"Many of our local problems are approaching solution through the work already accomplished by my predecessors in the organization and by the management of the agency. The general public, perhaps, does not realize the many factors in this industry which they have been endeavoring to harmonize into one working unit. Men of the type of Ralph B. Lloyd, our president; Neal H. Anderson, vice president, and members of the advisory committee have unselfishly and in the broadest public spirit devoted almost continuous attention to the problems of the agency since its organization a few months ago.

"Our directors have rendered equally excellent service, and there has been evident at all times in their deliberations a whole-hearted intent to benefit, not alone the members of the agency, but the industry as a whole, with the thought always before them that the stabilization of the oil industry was a basic step upon which to restore conditions generally in the State."

A proposed reorganization by which Mr. Lloyd was to become chairman of the board and L. T. Barneson president of the agency did not materialize.

WILDCAT TEST IN NEBRASKA

The Little River Gas Co. announces it has spudded a wildcat in Franklin County, on a block of 20,000 acres of leases, about 10 miles north of Franklin, the county seat. The test is expected to be drilled to a total depth of 3,800 feet, unless oil or gas is found at a shallower depth. The development work is in charge of Kirk Hawkins, general manager of the Little River Gas Co.

OHIO OIL MAN DEAD

MARIETTA, Ohio, Aug. 8.—Harvey E. Smith, 68, prominent independent oil operator in the Ohio and Mid-Continent Fields, died at his country home, Evergreen Shade.

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9 lines	3.15	5.40	7.65	9.90
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Tulsa, Oklahoma

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Am in the market for small diamond core-drill and equipment. Must be in good condition and priced right. Write Box E-531, The Oil and Gas Journal, Tulsa, Okla.

WANTED USED HEAVY ROTARY DRILLING RIG

Must be near new, complete with everything needed to drill deep hole, including about six thousand feet of national upset drill pipe with tool joints, must be roller bearing of late model in perfect condition, and a bargain for spot cash. IDEAL NATIONAL RIG PREFERRED, also interested in good heavy rotary derrick. Answer with complete inventory of rig, and history as to how much hole has been made with same and where, would consider rig complete in every way without drill pipe if price was right. State lowest cash price or terms and shipping point, to Box E-538, The Oil and Gas Journal, Tulsa, Okla.

FOR SALE—EQUIPMENT

FOR SALE—Slightly used Ingersoll-Rand steam two stage, 250-pound air compressor. Piston displacement. 312 cubic feet per minute at 200 r.p.m. Complete with intercooler and receiver. Write Box E-456, The Oil and Gas Journal, Tulsa, Okla.

200 Amp. Lincoln Arc Welder, 220/3/60. Practically new. Price $425.00. 100 Amp. Federal Butt Welder; 220 V. 60 cy. Complete. Excellent condition. $500.00. 12"x14" Chicago Pneumatic Air Compressor. $350.00. 46"x18' Niles Lathe, Quick change; $1,250.00. Also, large stock of lathes, shapers, mailing machines, pipe machines, bolt threaders; etc. Send for our list. Terms to suit.
CINCINNATI MACHINERY & SUPPLY CO.
26 West Second St., Cincinnati, O.

ONE MODEL 3168 Buckeye ditching machine in A-1 condition together with plenty of spare parts and one complete blacksmith outfit. Address F. H. Carson, 222 W. Dewey St., San Antonio, Tex.

FOR SALE—BUTANE GAS MANUFACTURING plant and distribution system to serve approximately 500 customers. Recently completed. In southwest Missouri. Population approximately 3,000; other surrounding towns make it possible to build additional plants with a total of 2,500 meters. Can be bought for actual cost; part cash, balance reasonable terms to responsible party. This is a real bargain. Write Box E-545, The Oil and Gas Journal, Tulsa, Okla.

WANTED: A SMALL MOUNTED Diamond Core Drill. Will either buy or lease. J. Martin, 220 W. Elm Enid, Okla.

FOR SALE—EQUIPMENT

FOR SALE—SULLIVAN DIAMOND CORE DRILL with equipment. Capable drilling 2,000 feet. Practically new; only drilled one hole. Address P.O. Box 1897, Tulsa, Okla.

FOR SALE: Leeds Northrup Optical Pyrometer complete with telescope and control box. Instrument in perfect working order and will be sold for an attractive price. Write Box E-541, The Oil and Gas Journal, Tulsa, Okla.

EXTRA HEAVY 122' steel derrick, standard equipment, largest band wheel made, steel bull wheel, chain driven sand reel, best money can buy, drilled one 6,000' well; also 2,000' 11¾ extra heavy Class D seamless casing; also 2,000' 9" extra tensile and collapse strength casing; also Hinderliter casing clamps same size; also Braden steel engine and belt house for rig. Now located north of Electra, Wichita County, Texas. H. B. Dudley, 924 Hamilton Bldg., Wichita Falls, Texas.

FOR SALE for a low price. A gasoline powered Sullivan Diamond Core Drill. Write Box E-492, The Oil and Gas Journal, Tulsa, Okla.

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DEEDED MINERAL interest under 320 acres land in Yoakum County, Texas. Major oil company lease. In hot spot of county. Perpetual mineral deed to 1/128th interest. Price $25. S. E. Curry, Box 771, Plainview, Tex.

WILL SACRIFICE at 20 cents per acre, 3,500 acres in a solid block in Pitt, Crane and Mifflin Townships, Wyandot County, Ohio, between two proven gas fields. Ten-year leases, 25 cents; rentals paid up to December. No dry holes, good market for gas. J. S. Aber, 318 N.E. Seventeenth St., Miami, Fla.

OIL located before drilling. Geophysical method. Toggodometer Instrument; take pay in oil. No oil, no pay, except traveling and testing expenses, 95 per cent accuracy. O. P. Coffin, Caddo, Tex.

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FOR SALE—TEXAS COMPANY BULK AGENCY. Good town on intersection of two national highways. Box E-503, The Oil and Gas Journal, Tulsa, Okla.

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FREE MAP East Texas oil area with drilling data. W. J. Dobbs, 915 Tower Petroleum Building. Dallas, Texas.

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CAPITAL: An exp. dependable broker will aid in financing projects of merit. Amster Leonard, East Orange, N. J.

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Having spent many years with a major producing company and having access to much geological data, I have acquired many good oil and gas lease tracts which can be had at this time. Well worth the money. Communicate with me. Write Box E-527, The Oil and Gas Journal, Tulsa, Okla.

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FOR SALE: Oil and Gas leases on 10,500 acres in Wayne, N. Y., Gas Field, close to producing area. Good Oriskany and Medina structures. Reasonable price for cash. Address BENNRONA CORPORATION, P. O. Box 82, Brighton Station, Rochester, N. Y.

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VERY WELL LOCATED 10-acre oil lease in Starr County, Texas, cheap for quick sale. For particulars write Box 104, Elrose, Saskatchewan, Canada.

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$5.00 BUYS TOTAL RECOVERY REPORT of Oklahoma City Field to June 1st and monthly Potential Report showing allowables, overage and underage, production and pipe line runs for July. Clyde Kelly, 504 Cont'l. Bldg., Oklahoma City, Okla.

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ROYALTIES—PRODUCTION

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KILGORE—ROYALTIES, LEASES, and town property for sale. Let us handle your Kilgore interests. Friedman & Davis, Box 945, Kilgore, Texas.

ROYALTIES—PRODUCTION

PRODUCTION, and nonproducing gas royalties, Stevens County, and Panhandle fields, Kansas, Oklahoma, and Texas royalties. Special service for brokers. List and maps. James R. Haynes, Grantville, Kans.

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MECHANICAL ENGINEER, graduate, eight years experience of oil well equipment in shop, field and office desires permanent position with reliable concern, foreign or domestic. Write Box E-537, The Oil and Gas Journal, Tulsa, Okla.

YOUNG man with refinery, time keeping and pay roll experience wishes permanent connection with oil company offering future in accounting. C. E. Terry, 321 Harrison St., Longview, Tex.

MANAGER AND SUPERINTENDENT
Graduate engineer, 12 years oil field experience with major and independent companies, in geological, scouting, land and leasing, drilling and production departments. Thoroughly experienced oil field manager with exceptional references. Will accept position in any of above departments or in charge of operations or developments. Write Box E-522, The Oil and Gas Journal, Tulsa, Okla.

CIVIL ENGINEER, natural gas experience, producing, transportation, distribution, desires position. Write Box E-542, The Oil and Gas Journal, Tulsa, Okla.

EXPERIENCED REFINERY SUPERINTENDENT—15 years' experience in all type refinery operations, cracking, topping, skimming, asphalt, etc. Can build and operate refinery any capacity. Willing to locate anywhere. Address Box E-546, The Oil and Gas Journal, Tulsa, Okla.

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TULSA OKLAHOMA

POSITIONS WANTED

PETROLEUM CHEMIST AND ENGINEER, 3½ years, topping, cracking, treating, lub; married, 28; inventive, industrious, co-operative; East Texas or anywhere; Technical Supervisor capacity, 2 or more small stable refineries. Write Box E-536, The Oil and Gas Journal, Tulsa, Okla.

PURCHASING RIGHT OF WAY and claim adjuster wishes position at once. Best references. Thomas E. Madigan, 174 North Grove St., East Orange, N. J.

EIGHT YEARS WITH major refinery, past three years with engineering company. Experience with several types stills. Capable of executive position. Age 31. Reference. Will consider anything with future. Address Box E-539, The Oil and Gas Journal, Tulsa, Okla.

YOUNG MAN experienced field office clerk and timechecker. Location immaterial. Write C. F. Liechti, 5003 N. 22nd St., Omaha, Nebraska.

GRADUATE GEOLOGIST—Six years' experience in Mid-Continent. Three years with major oil companies. Two years general manager-geologists for royalty company. Desire temporary or permanent work. Excellent references. Write Box E-544, The Oil and Gas Journal, Tulsa, Okla.

REFINERY SUPERINTENDENT
Now open for offer; 15 years' experience in operating all types topping and cracking plants. Excellent references. Write Box E-543, The Oil and Gas Journal, Tulsa, Okla.

LAND AND LEASE MAN
COLLEGE GRADUATE, several years oil and gas experience, checking and buying leases, royalties and producing properties. Excellent references. Write Box E-521, The Oil and Gas Journal, Tulsa, Okla.

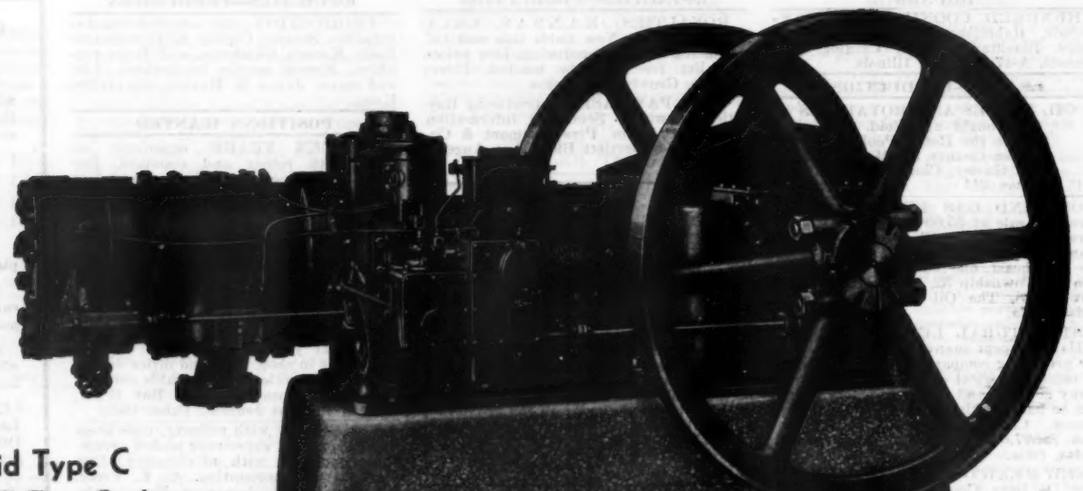
HELP WANTED

I NEED A SALESMAN to sell Oklahoma oil royalties and land. My plan would place you in business for yourself. Write Box E-493, The Oil and Gas

NEED GOOD LEASE broker in every city to help handle large quantity active cheap leases Panola-Shelby areas East Texas. W. J. Dobbs, 915 Tower Petroleum Bldg., Dallas.

WANT EXPERIENCED REAL ESTATE or Securities Salesman to sell Oil Royalties in Chicago. Splendid co-operation. Permanent, profitable connection. References required. Write to P.O. Box 454, Chicago, Ill.

AND FOR EAST TEXAS—
A Proven Power Behind the Beam



Reid Type C
40 HP Two-Cycle
Gas Engine

Reid Type C Gas Engines have for several years been the power behind the beam on producing wells in Kansas and in Arkansas, in the Seminole, and more recently, in West Texas and New Mexico. Shallow wells, or deep—it mattered not, for Reid Type C Gas Engines are built in sizes from thirty to eighty horse-power and each size has a wide speed range, making the power behind the beam always dependable.

In view of the proven ability of these engines in other fields, it is no wonder that seasoned producers are making short work of deciding that the Reid Type C Gas Engine is the engine to put behind the beam on new East Texas wells.

Reid

BRANCHES

Marietta and Newark, Ohio; Charleston, W. Va.; S. R. Shoup, 724 Board of Trade Bldg., Los Angeles, California.

DISTRIBUTORS

Frick-Reid Supply Corp., Pittsburgh, Pa., and Tulsa, Okla., Distributors for Bradford and Pittsburgh, Pa.; Mt. Pleasant, Mich.; Kentucky, Oklahoma, Kansas, Texas, Arkansas, Louisiana, and Wyoming; R. B. Moore, Bolivar, N. Y.; Republic Supply Co. of California, Los Angeles, Calif.

EXPORT REPRESENTATIVE

Oilfield Equipment Co., Inc., 30 Church St., New York City.

Joseph Reid Gas Engine Company, Oil City, Pa.

ROCKY MOUNTAIN AREA

(Continued from Page 59)

feet. Peoples Oil & Gas Co.'s No. 1 First National Bank, C SE NW, Section 17-36-6e, is shut down for pipe at 1,285 feet.

The California Co.'s No. 1 Eleanor Association, CWL SE SE of Section 11-33n-6e, at Utopia is drilling ahead at 3,227 feet after landing 6¼-inch at 3,120 feet.

Cascade County

Andover Oil Co.'s No. 1 Floweree, NW cor. SE, Section 20-21-2w, Big Coulee, is shut down at 2,200 feet with 1,200 feet of sulphur water in the hole.

Teton County

Earl Oil Corp., Ltd.'s No. 1 Gad, SE cor. NE, Section 22-22-8w, Sun River, is drilling at 3,700 feet, and Trans-American Oil Co.'s No. 1 Lackey, SE NE NW, Section 28-24-8w, Teton district, has set 12½-inch at 430 feet. The California Co.'s No. 1 Sullivan, NW NE NW, Section 34-27 7w, Bynum district, is drilling at 855 feet.

Rosebud County

Prairie Oil & Gas Co.'s No. 1-XX, Contract 4, NE SW NW, Section 26-10-39, is rigging up for a deep test of the Porcupine Dome in Rosebud County. The contract depth is 5,000 feet; objective, all sands below the top of the Quadrant formation to granite.

WYOMING

Weston County

Hugh Updike has an especially nice well in his No. 2, CNL SE NW of Section 23-46n-64w, in the Osage Field. Sands at 1,851-63 and 1,866-72 feet responded to a 40-quart shot with an initial production of 200 bbls. Tom Don has a rig up for his No. 3 well on NW SW SE of Section 23-46n-64w. Riggs Oil Co.'s No. 1, SE SE NE of Section 16-46n-64w, is drilling at 550 feet. Yellowstone Petroleum Co.'s No. 1, NE NE NW of Section 23-46n-64w, is drilling at 500 feet. Bradley-Manwell's No. 10, CEL SW NW of Section 20-46n-64w, is drilling at 400 feet. Wytex Oil Co.'s No. 7 Logan McCullough, NW SW NE, Section 23-46n-64w, is drilling at 800 feet. Julius Peters and others' No. 1 Witzell, at Fiddler Creek, SE cor. NW of Section 30-46n-64w, is cementing old hole at 1,808 feet.

Converse County

Continental Oil Co.'s No. 50 Whiteside, NW SW SW, Section 9-33-76w, Big Muddy Field, which is being deepened to the Lakota from the Frontier at 3,207 feet, is standing with the 6¼-inch cemented at 4,376 feet on top of the Lakota. The core showed oil and gas saturation.

Niobrara County

Indian Petroleum Co.'s No. 1, NE NW NE. Section 7-35-65w, Lance Creek Field, which is being deepened to the Sundance at 4,200 feet, is drilling at 4,050 feet.

Big Horn County

Portland Association, Inc.'s No. 1, SE NE SE, Section 29-56-97, Garland Dome, is fishing for drill stem at 4,250 feet. It topped the pay at 3,893 feet and from present indications this well, which is being drilled to the Madison lime, will be as good a well as Ohio Oil Co.'s No. 1 Easton, the discovery well, which on a short test indicated a capacity of at least 5,000 bbls. daily.

Utah Southern Oil Co.'s No. 3 Government, NE cor. SW, Section 29-56-97, a mile to the northwest of No. 1 Easton, is drilling and coring in Madison lime oil horizon below 4,100 feet and is showing for an oil well, according to company report. A 3-inch liner was set at 3,887 feet and it made 15,000,000 feet of gas from the top of the lime. The core from 3,924 feet to bottom showed oil saturation.

Ohio Oil Co.'s No. 1 Smith, NE SE SE, Section 33-56-97, showed for 1,500,000 feet of gas at 1,976 feet and is being tested. At 1,707-28 feet it gauged 20,000,000 feet of gas in 24 hours from the Frontier.

Park County

Midwest Refining Co.'s No. 24 Rosenberg, NE SE NE, Section 26-58-98, Frannie Dome, is drilling at 1,730 feet in gray shale. This operation has been delayed by shale caves.

Resolute Oil Co.'s No. 1, NE SW NE, Section 17-57-101, Badger Basin, is shut down at 8,725 feet for orders. It was drilled through the first and second Frontier sands. It flows by heads each 18 hours, making around 35 bbls. per head, accompanied by about 2,000,000 feet of gas per day.

Washakie County

Ohio Oil Co.'s No. 1 Strothers, SW SE NW, Section 19-45-92, Neiber Dome, is drilling at 6,960 feet and near the top of the first sand of the Frontier formation. The 9⅝-inch was cemented at 6,144 feet.

Natrona County

Midwest Refining Co.'s No. 11 Middy, C NE NE, Section 23-35-79, Midway Dome, after plugging back to the Muddy sand at 5,983 feet, has cleared the hole of tools and wire line and is bailing to test.

Laramie County

Prairie Oil & Gas Co.'s No. 1 Warren, SE NE SE, Section 22-13-68, southwest of Laramie, has been completed as a water well at 639 feet. The well was taken over by the Warren Livestock Co. and will be used for irrigation purposes. The capacity is estimated at 8,000 bbls. of water a day.

Carbon County

Midwest Refining Co.'s No. 27 Union Pacific, NW SE SE, Section 11-20-81, Elk Mountain, is drilling at 3,280 feet in shale and fighting a cave. Prairie Oil & Gas Co.'s No. 1, SE cor. SW, Section 29-27-89, deep rotary test, is rigged up ready to spud. Producers & Refiners Corp.'s No. 1, SW cor., Section 19-20-83, Overland Dome, is resuming at 1,283 feet after a short shutdown for repairs.

Fremont County

Producers & Refiners Corp.'s No. 2, NW SE NW, Section 33-34-92, Muskrat Dome, has been plugged back from 6,081 feet to 5,375 feet and is waiting for cement to set. A test taken at 6,000 feet showed some gas saturation and slight oil colors.

Kinney-Coastal Oil Co.'s No. 1 Chatteron-Weeks, C SW NE, Section 22-3n-1w, Pilot Butte, has landed 40 feet of 15½-inch casing and is spudding. It is half a mile to the northeast of the company's No. 1 Dykeman, a big gas well in the Muddy. Electricity for power is being taken from the Riverton electric project.

Sweetwater County

Mountain Fuel Supply Co.'s No. 1 Tucker, C NW SE, Section 18-13-99, Alkali Creek, is cleaning out at 3,613 feet after cementing 6⅝-inch casing at that depth. This well should be an early completion as it is near the top of the gas sand.

Pipe Line Runs

Average daily pipe line runs in week ending August 8:

WYOMING	
Salt Creek	23,440
Big Muddy	1,870
Byron	10
Dallas-Derby	410
Dutton Creek	80
Elk Basin	660
Ferris	40
Frannie	40
Grass Creek	2,130
Hudson	410
LaBarge	1,150
Lance Creek	300
Lost Soldier	4,160
Lovell	....
Oregon Basin	1,360
Osage	1,060
Rock River	1,860
Poison Spider	180
Simpson Ridge	....
South Casper	710
Teapot	20
Warm Springs	70
Total Wyoming	39,960
MONTANA	
Buckley-Border	630
Cat Creek	970
Dry Creek	390
Kevin-Sunburst	4,450
Lake Basin	70
Pondera	1,480
Total Montana	7,990
COLORADO	
Florence	210
Fort Collins	920
Iles	1,230
Moffat	830
Orchard	350
Rangely	20
Tow Creek	310
Walden	100
Total Colorado	3,970
NEW MEXICO	
Rattlesnake	925
Hogback	500
Table Mesa	75
Artesia	30
Cap Rock	247
Getty	....
Hobbs	37,964
Jal	1,212
Lea City	1,985
Eunice	483
Total New Mexico	42,521
Total Rocky Mountain area	94,441
Total previous week	92,873
Difference	1,568

NORTH AND WEST TEXAS

(Continued from Page 41)

plugged back to 4,506 feet, top pay 4,478 feet, swabbing and flowing.

Culberson County

Grisham & Hunter's No. 1 Garren, temporarily abandoned, total depth 2,514 feet. Hitler's No. 1 McGregor, temporarily abandoned, total depth 825 feet. Scott & Dittman's No. 1 Miller, abandoned but not plugged, total depth 3,508 feet.

El Paso County

Layne-The Texas Company's No. 1-A Malone, dry and abandoned, total depth 3,089 feet.

Hudspeth County

Henshaw and others' No. 1 Reagan-McIlvain, abandoned location. Rush-Anderson-More's No. 1 Wheat, abandoned location.

Lubbock County

Center Oil Co.'s No. 1 Boles, dry and abandoned, total depth 4,171 feet.

Reeves County

Exploration Co.'s No. 1 McCarty, temporarily abandoned, total depth 2,900 feet.

Ward County

Gulf Production Co.'s No. 8 Hutchins Stock Association, elevation 2,682 feet, top salt 1,265 feet, top lime 2,325 feet, top pay 2,552 feet, initial production 372 bbls. per day with 100,000 feet of gas.

Irion County

Perry Fox's No. 1 Horney, dry and abandoned, total depth 1,503 feet, elevation 2,232 feet.

Jones County

Moutray Oil Co.'s No. 3 Mrs. Jane Hoyt, top pay 1,966 feet, initial production 15 bbls. per day, total depth 1,974 feet.

SHIPMENTS THROUGH TRUNK LINES

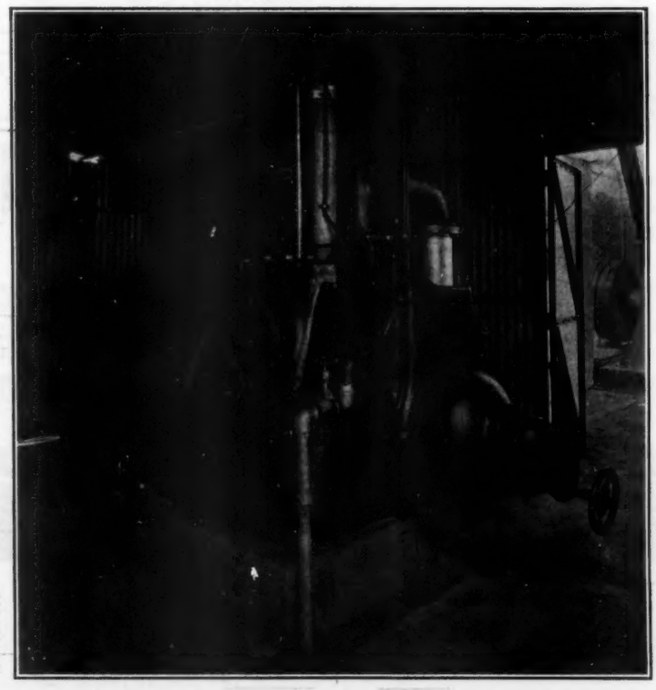
Company, size and location—	Bbls.
Atlantic, 10-inch, Houston	14,931
Gulf, 10-inch, Ranger	24,958
Humble, 2 and 8-inch, San Angelo	35,053
Humble, 10 and 12-inch, Comyn	50,537
Illinois, 2 and 8-inch, Del Rio	29,418
Magnolia, 8-inch, De Leon	12,742
Pasotex, 8-inch, El Paso	6,948
Shell, 10-inch, Healdton	29,620
Shell, 10-inch, Houston	....
Texas, 12-inch, Houston	21,717
Total	225,924

SHIPMENTS TO WEST TEXAS REFINERIES

Big Spring Ref. Co., Big Spring	960
Burford Ref. Co., Pecos	3,804
Cosden Ref. Co., Big Spring	7,410
Coltex Ref. Co., Colorado	8,000
Great West Ref. Co., Pyote	2,188
Tonkawa Ref. Co., Pyote	1,366
Wickett Ref. Co., Wickett	1,042
Total	24,770

SHIPMENTS BY TANK CAR

Shell, from McCamey	400
Fox & Thorsen, from Mertzon	....
Big Lake, from Texon	5,000
Thomas Brann, from Grant City	175
Total	5,575
Total daily average production	200,485
Total daily average distribution	256,269
Daily average from storage	55,784



55 H. P. Diesel oil engine on pumping well Kilgore Pool, East Texas.

TEAPOT DOME DRAINAGE

A report on the significance of geologic conditions in Naval Petroleum Reserve No. 3, Wyoming, Teapot Dome, by W. T. Thom, Jr., and Edmund M. Speaker, has just been published by the United States Geological Survey, Department of the Interior, as Professional Paper 163. This publication contains results of detailed field and office investigations of the geology, fluid contents, and liability to drainage. From their detailed studies the authors conclude that the absence of dangerous or extensive loss of gas and oil from Reserve No. 3 by drainage to wells just outside the reserve boundary has been established beyond reasonable doubt, that the oil remaining in the "Second Wall Creek sand" in the Teapot Field is safe from drainage, and that such possible oil pools as may be present in other sands underlying the reserve are likewise safe from loss induced by operations outside its boundaries.

EXPANDS BARGE SYSTEM

NEW ORLEANS, La., Aug. 8.—Establishing an accounting department of sufficient size to handle all its business in the South, the Pan American Petroleum & Transport Co. has abandoned several accounting divisions maintained in other cities. The corporation will also expand its system of barge line transportation on the Mississippi River for concentration of its products at distribution points.

EAST TEXAS FIELD HAS ENORMOUS CRUDE OUTLET

(Continued from Page 15)

ing on the new district for vast supplies of oil to supply their needs, thereby cutting the cost of transportation to a great extent.

Tank car racks were used for a time by the major companies, the railroads in the district cutting their rates soon after the Lathrop Pool was discovered in Gregg County. This forestalled construction of trunk lines for but a short time, the major pipe line companies knowing full well that greater outlets would be needed, and that transportation costs could be cut by building their own trunk lines from the district to refineries and terminals on the coast.

At the present time there are 10 trunk lines out of the district with four laterals connecting to Mid-Continent-Gulf Coast main line systems, and three other trunk lines under construction. Survey has been made and part of right of way purchased for another trunk line from the district, and one of the major companies, the Texas Pipe Line Co., has announced that it will build still another trunk line out of the district to the Gulf Coast.

Record Pipe Line Activity

Total daily capacity of the trunk lines serving the district is 544,500 bbls., while total capacity of lines under construction will be in the neighborhood of 135,000 bbls., and total capacity of the proposed lines will be around 105,000 bbls., making a total trunk line outlet of somewhere in the neighborhood of 784,500 bbls. per day, the greatest pipe line record ever known in the oil history of the country. All of this pipe line activity has taken place in nine months, but not all the lines being completed within this period. However, there has been an average of more than one trunk line completed out of the district every month since the opening of the vast producing district in Gregg, Rusk, Upshur and Smith Counties.

The Atlantic Pipe Line Co. is now building 180 miles of 10-inch trunk line from the district to its terminal at Atreco near Beaumont, into which its West Texas trunk line connects. The Shell Pipe Line Co. is soon to complete 198 miles of 10-inch trunk line from its Kilgore Station in Gregg County to its Houston refinery and terminal at Houston. The Sun Pipe Line and Yount Lee Pipe Line Co. is now testing out the northern part of its 200 miles of 10-inch line from its Troup Station in southwestern Rusk County to Sun City on the Gulf Coast near Beaumont. The latter company was recently organized to build this line in conjunction with the Sun Pipe Line Co. Both companies have affiliated companies, the Sun Oil Co. and Yount Lee Oil Co., which have producing acreage in Gregg and Rusk Counties.

The Texas Pipe Line Co., which has 50 miles of 10-inch line from Gregg County connecting with its main trunk line at Douglas Station in Nacogdoches County, has announced that it would lay a still greater line from the district, a 12-inch to Port Arthur on the Gulf Coast. Such a line will be approximately 200 miles in length and will have a capacity of around 60,000 bbls. per day.

Trunk line capacity has almost kept apace of drilling activities and daily production, the daily average production of the district last week being a little more than 600,000 bbls., while total trunk line outlet, as mentioned above, is 544,500 bbls. per day.

Loading Rack Capacity

Total daily capacity of loading racks is estimated at around 851,000 bbls. from 52 racks, three of which are now under construction, the others in operation. But pipe line scouts report that only about 370,000 bbls. per day can be moved by tank cars by the three railroads on which the racks are located, thereby cutting down the daily amount of oil which can be shipped out by this method. The 52 racks have a tank car capacity of 1,856 cars, the racks being owned by independents and majors alike. Oil is being consigned by tank cars to various points throughout the Mid-Continent.

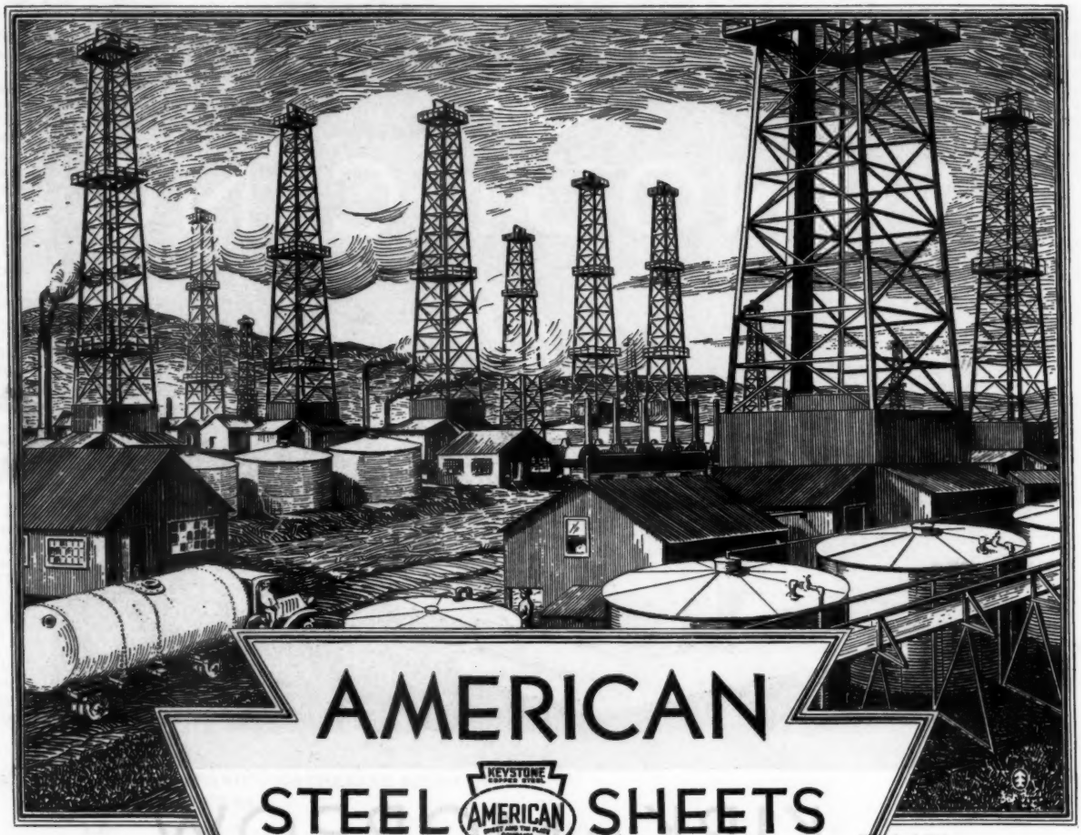
STEEL STORAGE REPORT—EAST TEXAS—AS OF AUGUST 5, 1931
RUSK, GREGG, SMITH, UPSHUR, CHEROKEE AND NACOGDOCHES COUNTIES

Company—	Location—	Completed	Building	Announced
Ark. Fuel Oil Co.	Longview	2—55,000		
Atlas P. L. Co.	Longview	3—80,000		1— 5,000
				1—10,000
Atlantic P. L. Co.		4—55,000		
		1—80,000		
C. P. Oil Co.	Henderson	2— 4,000		
Crown P. L. Co.	Friars Switch	2— 5,000		
Central P. L. Co.	Overton	2— 5,000		
	Joiner	1—10,000		
East Texas Ref. Co.	Longview	2—10,000		
	Friars Switch	1—80,000		
Cranfill & Reynolds	Longview	5—55,000		
		1—10,000		
Gulf P. L. Co.	Henderson	1—55,000		
	Overton	1—55,000		
	Big Sandy—Upshur County	1—55,000		
		2—37,500		
Humble O. & R. Co.	Kilgore	4— 5,000		
Humble P. L. Co.	Joiner	2—64,000		
	Longview	2—64,000		
		1—30,000		
		1—80,000		
		1—55,000		
	Cherokee County	4—55,000		
Houston Oil Co.	Kilgore	1—80,000	2—80,000	
	Kilgore	4—55,000		
	Amigo	2—80,000		
Illinois P. L. Co.	Camp	4—55,000	6—55,000	
Inland Waterways P.L.	Friars Switch	3— 5,000		
Magnolia Pet. Co.	Kilgore	3—80,000		
		2—55,000	2—80,000	
Nat Hunter Oil Co.	Friars Switch	2—10,000		
Petroleum Mark. Co.	Friars Switch	1—10,000		
		1— 5,000		
	Joiner	2— 5,000		
Panola P. L. Co.	Friars Switch	1— 5,000		
Rusk County P. L. Co.	Joiner	1—80,000	Leased to E. Tex. Ref. Co.	
Republic Prod. Co.	Reed Switch	2—10,000		
		2—80,000		
Shamrock P. L. Co.			2—80,000	
Shell P. L. Co.		1—80,000		
		1—55,000	2—80,000	
Sun-Yount Lee	Joiner	4—80,000		
Sinclair- Texas P. L.	Friars Switch	2— 5,000		
	Kilgore	1—10,000		
	Arp	2—80,000		
Texas Independent P.L.				6—80,000
Texas P. L. Co.	Reed Switch	3— 5,000		
		3—10,000		
	Joiner	3—10,000	8—80,000	
		4— 5,000		
		4—80,000		
	Nacogdoches Co.	4—55,000		
Tidal P. L. Co.	Joiner	2—10,000		
Tyler P. L. Co.	Tyler	2—55,000		
Toronto P. L. Co.	Overton	1—55,000		
(British-American)	Joiner	2—80,000		
Woodley Pet. Co.	Kilgore	2—55,000		
		1—80,000		
		1—37,500		
Vitek-Williamson County Oil Pur. Co.	London	1—10,000		1—80,000
Total		5,181,500	1,610,000	575,000
Number of tanks				112
Total steel completed				5,181,500
Total steel building, 22				1,610,000
Total steel announced, 9				575,000
Total all				7,366,500

LOADING RACKS—EAST TEXAS DISTRICT AS OF AUGUST 6, 1931

Company—	Car capacity	Estimated capacity	Location racks	Railroad connection
Longview district—				
Arkansas Fuel Oil Co.	50	20,000	Willow Springs	T.&P.R.R.
Atlas Pipe Line Co.	70	25,000	Footes Switch	I.&G.N.R.R.
Bell O. & G. Co. and Danciger O. & R. Co.	30	20,000	Footes Switch	I.&G.N.R.R.
Cherokee Chief Oil Co.	25	10,000	Gladewater	T.&P.R.R.
Cranfill-Reynolds P. L.	67	25,000	Longview	G.C.&S.F.R.R.
East Texas Rfg. Co.	75	20,000	Longview	T.&P.R.R.
F. & M. Transport Co.	30	15,000	Camp Switch	T.&P.R.R.
Macmillan Pet. Co.	40	10,000	Camp Switch	T.&P.R.R.
Pilot Oil Co.	50	20,000	Willow Springs	T.&P.R.R.
Shell Pet. Co.	30	17,000	Camp Switch	T.&P.R.R.
Simms Oil Co.	20–36	15,000	Camp Switch	T.&P.R.R.
Slack Pet. Co.	8	6,000	Camp Switch	T.&P.R.R.
Southport Rfg. & Export. Co.	25	10,000	Gladewater	T.&P.R.R.
Superior Oil Co. of Calif.	25	10,000	Gladewater	T.&P.R.R.
Tidal Oil Co.	26	25,000	Camp Switch	T.&P.R.R.
T. P. C. & O. Co.	10	12,000	Gladewater	I.&G.N.R.R.
Total district		260,000		
Kilgore district—				
Burton Drilling Co.	25	8,000	Kilgore	I.&G.N.R.R.
Etex Oil Corp.	25	12,000	Kilgore	I.&G.N.R.R.
Houston Oil Co.	70–44	24,000	Kilgore	I.&G.N.R.R.
Humble O. & R. Co.	78	40,000	Kilgore	I.&G.N.R.R.
Indian State Oil Co.	25	10,000	Kilgore	I.&G.N.R.R.
Kilgore Ref. Co.	25	10,000	Kilgore	I.&G.N.R.R.
Marine Corp.	40	10,000	Kilgore	I.&G.N.R.R.
Oriental Ref. Co.	6	300	Kilgore	I.&G.N.R.R.
Petroleum Marketing Co.	50	30,000	Kilgore	I.&G.N.R.R.
Republic Prod. Co.	56	30,000	Reed Spur	I.&G.N.R.R.
Sabine P. L. Co.	50	25,000	Reed Spur	I.&G.N.R.R.
Shell P. L. Co.	60	25,000	Kilgore	I.&G.N.R.R.
Sinclair-Tex. P. L. Co.	40	22,000	Kilgore	I.&G.N.R.R.
Stanolind P. L. Co.	50	22,000	Kilgore	I.&G.N.R.R.
Texas Unity Oil Co.	60	25,000	Kilgore	I.&G.N.R.R.
Total district		293,300		
Joiner area—				
Central Ref. Co.	40	.....	Friars Switch	O.&H.R.R.
C. & P. Oil Co.	26	8,000	Henderson	O.&H.R.R.
Crown P. L. Co.	36	15,000	Friars Switch	O.&H.R.R.
East Texas Ref. Co.	32	15,000	Friars Switch	O.&H.R.R.
Hunter, Nat (Gulf Coast P. L.)	50	20,000	Friars Switch	O.&H.R.R.
Inland Waterways P. L.	30	15,000	Friars Switch	O.&H.R.R.
Panola P. L. Co.	56	20,000	Friars Switch	O.&H.R.R.
Petroleum Marketing Co.	40	15,000	Friars Switch	O.&H.R.R.
Pilot Oil Co.	25	10,000	Norfork	O.&H.R.R.
Rusk County P. L. Co.	36	15,000	Friars Switch	O.&H.R.R.
Sinclair-Tex. P. L. Co.	60	22,000	Friars Switch	O.&H.R.R.
Total district		155,000		
Overton area—				
Butler-Calhoun	16	16,000	Overton	I.&G.N.R.R.
Constantin Ref. Co.	10	8,000	Overton	I.&G.N.R.R.
John W. Hoosier	25	12,000	Overton	I.&G.N.R.R.
Overton Ref. Co.	15	10,000	Overton	I.&G.N.R.R.
Rusk Ref. Co.	12	8,000	Overton	I.&G.N.R.R.
Toronto P. L. Co.	48	20,000	Overton	I.&G.N.R.R.
Witherspoon Oil Co.	25	12,000	Overton	I.&G.N.R.R.
Total district		86,000		
Smith County—				
Houston Oil Co.	42	20,000	Amigo Switch	C. Belt R.R.
Illinois P. L. Co.	12	12,000	Arp	I.&G.N.R.R.
Taylor Ref. Co.	60	25,000	Tyler	C. Belt R.R.
Total district		57,000		

Grand total 52 racks. Estimated capacity 851,300 barrels.



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American Sheet and Tin Plate Company

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THE KIRK-MORROW DRILLING AND PUMPING UNIT

The very latest thing—and being hailed widely. Every operator will want to see our descriptive folder on this new equipment, a copy of which will be sent promptly upon your request.

The Kirk-Morrow Combination Drilling and Pumping Unit represents the latest development in equipment designed for the greatest efficiency in drilling and pumping wells. The Chain Drive is almost 100% efficient in the transmission of power and at the same time is sufficiently flexible to absorb stress in shock loads. Extra-heavy Jack Posts, over-size Bearings and special construction of Sprocket Wheel and Tug Wheel give this unit an assembly of equipment suitable for work of the heaviest kind. The Unit is offered in two types, Type "A" and Type "B", having 6" and 7½" diameter crank shafts respectively, and may be operated with Gas, Oil and Steam Engines, or with an Electric Motor.

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Steel Derricks, Rig Irons, Bull Wheels, Band Wheels, Crown Blocks, Combination Drilling and Pumping Unit, Tug Wheels, Sand Reels, Steel Tankage, Floating Roofs, Tank Fittings, Refinery Equipment, Semi-Steel Castings, Steel Plate Construction.

THE KIRK-MORROW IRON WORKS COMPANY

General Offices: IOLA, KANSAS
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Arkansas, Louisiana, Texas and as far north as Canada, East Texas oil taking a preference to oil from pools adjacent to refineries in different parts of Texas. At the present time, since Governor Murray shut down Oklahoma wells, refineries in that State have solicited oil from operators in the East Texas district, but so far none has yet been shipped, although there is no doubt considerable oil will be sent to that State.

Major companies have a total of 10 loading racks in the district to which are connected various sized gathering lines from the fields which they serve. Other major companies use independently owned racks and lines for gathering and shipping of oil by tank car, over and above their trunk pipe line shipments. The Texas Company has been one of the largest shippers by this method.

Gathering Lines

There are 37 gathering lines owned and operated by independent operators and smaller companies in the district. These lines have a total mileage of approximately 158 miles, and a daily estimated capacity of 316,500 bbls. The majority of them are connected to loading racks, but in some cases connect directly with steel storage at local refineries.

Twenty-nine gathering and lateral lines are owned by larger and major companies, which are continually building extensions and still other gathering lines to connect to extension wells or remote sections of the producing areas. These lateral and gathering lines have a daily capacity of around 443,000 bbls. Some of these lines, owned by the Gulf Pipe Line Co., Tidal Pipe Line Co., Atlas Pipe Line Co. and Humble Pipe Line Co., connect with their own main trunk lines, or to the trunk lines of others. The Tidal Pipe Line Co. is in the latter class, having a 6-inch line from the Joiner area connecting to the Magnolia Pipe Line Co.'s 10-inch trunk line at Beckville Station, 25 miles to the east of the Joiner Pool. Magnolia acts as a common carrier for the Tidal Pipe Line Co. from this station to the Gulf Coast. These laterals cannot be included in the outlets of the fields due to their tying into other trunk lines or loading racks, which capacities have been given in the accompanying tables.

Tank Farm Capacity

As in trunk pipe line construction, the major companies have also led in the construction of steel storage, most of this storage being erected at loading racks or pump stations for emergency and auxiliary use. The Texas Company and Magnolia Petroleum Co. are the two leaders in steel storage construction. The former company is now constructing a tank farm northeast of the Joiner Pool on the Wilson farm in the B. Smith Survey, Rusk County, erecting twelve 80,000-bbl. tanks on this farm, the largest tank farm in the district.

The Mid-Kansas Oil & Gas Co., which has just sold its acreage and production in Gregg County, along with a loading rack and part of the storage, has also had considerable steel storage. Four 55,000-bbl. tanks were erected and six others were to be constructed on the E. M. Nettleton farm, John Ruddle Survey.

The Magnolia Petroleum Co. has its tank farm near its pumping station in the G. W. Groce Survey, Gregg County. Four 80,000-bbl. tanks and two 55,000-bbl. tanks are standing on this farm, while one other 80,000-bbl. tank is being constructed.

It was recently announced that the Texas-Independent Pipe Line Co. would erect six 80,000-bbl. tanks in the W. C. Alvice Survey, Gregg County, but if the company's proposed line is not constructed these tanks will probably not be built.

Steel storage at Mexia is also being put into service again after standing idle for a long period of time, the Stanolind Oil & Gas Co. and Humble Oil & Refining Co. utilizing such storage, the latter company filling this storage with East Texas crude transported through its Kilgore-Groesbeck 8-inch line.

Shipping Crude North

Gulf Coast storage is also receiving hundreds of thousands of barrels of East Texas crude through the many trunk lines from the latter district. One major pipe line company is transporting crude from Colonels Station in Freestone County through its Mid-Continent-Gulf Coast line, the oil being pumped north from this station. The Prairie Pipe Line Co. is the company which is transporting the oil north, taking it over from the Sinclair-Texas Pipe Line Co.'s 12-inch line at Colonels Station. At the present time Prairie is doubling its 8-inch line from Pruitt Station near Mexia to Hensley Station near Jacksboro, Tex., a distance of 157 miles. This loop will give the Sinclair Oil & Gas Co. an added outlet for its East Texas production, and purchased oil, the line being able to handle around 60,000 bbls. per day after this loop is completed. Another pumping station at Jacksonville, Tex., on the Sinclair-Texas Pipe Line Co.'s 12-inch line from East Texas to Colonels Station will also step up the capacity of this line to about 80,000 bbls. per day, the Pure Oil Pipe Line Co.'s Mexia-Smiths Bluff line taking part of this daily amount and carrying it to the coast for the Sinclair Refining Co., the remainder going north in the Prairie line. Sinclair storage at Mexia can also accommodate around 2,500,000 bbls.

The Gulf Pipe Line Co. is also shipping oil north, around 30,000 bbls. per day. This oil is taken over by the Gulf Pipe Line Co. in Oklahoma and thence transported to Gulf refineries at Pittsburgh, Toledo and Cincinnati along with other Texas and Oklahoma oil. None of it goes into storage in Oklahoma.

As steel storage can be erected cheaper now than heretofore, as independent operators may not be able to obtain desired connections and sufficient price from the major purchasers, and as the major purchasers can erect steel storage and fill it full of much cheap oil, a vast amount of such storage may be expected in the East Texas district, or may be built on the Gulf Coast at the companies' terminals, to which it will be transported by the trunk lines. While the construction of pipe lines in the district has been exceptionally active, the steel storage program has been retarded to date, but once started it will gradually expand, majors and independents alike erecting such storage.

Buy'ng Oil in the Ground

Three different companies are now operating in the district, purchasing oil in the ground, paying for it in advance, to sell at future dates, with the intention of offering oil certificates similar to grain and cotton futures, and these companies are erecting steel storage to handle the purchased oil as it is produced, and until time is ripe to sell for a good profit. Other such companies may be expected to start up, and if so will also erect considerable steel storage. The accompanying table gives the number of tanks erected, building and proposed in the district with corresponding capacities.

Unless some kind of a shutdown is put into effect the district may expect a larger steel storage program in the future, regardless of the number of trunk lines in the district. However, an advance in price of oil from the district may retard such growth due to the inde-

INDEPENDENT PIPE LINE COMPANIES' GATHERING LINES IN EAST TEXAS

Company—	Size P.L. in.	Estimated capacity Miles	bbls.	From	To
Burton Drilling Co.	4	4	8,000	Kilgore Pool	Kilgore rack
Butler-Calhoun	4	6	8,000	Joiner Pool	Overton rack
Central P. L.	6	7	12,000	Joiner Pool	Overton rack
C. & P. Oil Co.	4	7	8,000	Joiner Pool	Henderson rack
Cranfill-Reynolds P. L. ..	4	15	8,000	Kilgore Pool	Longview Sta.
Cranfill-Reynolds P. L. ..	8	1	15,000	Tank farm	I.&G.N.R.R. stg.
Cranfill-Reynolds P. L. ..	6	2	10,000	I.&G.N.R.R. tanks	Longview rack
Crown Central P. L.	6	4	10,000	Joiner Pool	Friar rack
East Texas Ref. Co.	6	3.5	10,000	Joiner Pool	Friar rack
East Texas Ref. Co.	4	3.5	8,000	Joiner Pool	Friar rack
East Texas Ref. Co.	6	12	10,000	Kilgore Pool	Longview Sta.
East Texas Ref. Co.	4	4	8,000	Longview dist.	Longview Sta.
F. & M. Transporting Co.	6	3	12,000	Longview dist.	Camp Switch rack
Hunter, Nat (Gulf Coast P. L.)	4–6	3	8,000	Kilgore Pool	Texas P. L. ter.
Inland Waterways P. L..	4	3.5	8,000	Joiner Pool	Friars Switch
Inland Waterways P. L..	4	4.5	8,000	Joiner Pool	Friars Switch
Indian State Oil Co.	6	1.5	10,000	Kilgore Pool	Kilgore
Marine Corp.	4	0.5	8,000	Kilgore Pool	Kilgore rack
Macmillan Pet. Corp. ...	4	4	8,000	Lathrop Pool	Camp Switch
Oriental Oil Co.	4	1	8,000	Kilgore Pool	Kilgore rack
Panola P. L. Co.	6	3.5	10,000	Joiner Sta.	Friars Switch
Panola P. L. Co.	4	6	8,000	Joiner Pool	Friars Switch
Petroleum Mark. Co.	6	4.5	12,000	Joiner Sta.	Friars Switch
Petroleum Mark. Co.	6	1.5	8,000	Kilgore Pool	Kilgore rack
Pilot Oil Co.	6	5	12,000	Lathrop Pool	Willow Springs
Pilot Oil Co.	4	1.5	8,000	Joiner Pool	Norfork spur
Superior Oil Co. of Calif.	6	..	..	Gladewater area	Gladewater
Sabine P. L. Co.	4	2	8,000	Kilgore Pool	Reed spur Gladewater
Southport Ref. & Exptng.	6–8	..	....		
Tyler P. L. Co.	8	19	20,000	Overton pump sta.	Tyler Sta.
Tyler P. L. Co.	4	7	8,000	Kilgore Pool	Overton Sta.
Tyler P. L. Co.	6	6	10,000	Joiner Pool	Overton Sta.
Woodley Pet. Co.	4	1	7,500	Kilgore Pool	Kilgore rack
Toronto P. L. Co. ..... (British Am. P. L. Co.)	4	5	8,000	Kilgore Pool	Overton rack
Toronto P. L. Co. ..... (British Am. P. L. Co.)	6	5	12,000	Kangerga tanks	Overton rack
Total		157	316,500		

Total miles pipe lines 157
Total estimated barrels capacity 316,500
Number independent gathering lines 37

TRUNK LINES OUT OF EAST TEXAS DISTRICT

Company—	Size	Length	Capacity	From	To
Arkansas P. L. Co.	8	66	30,000	Longview Sta.	Shreveport
Atlantic P. L. Co.*	10	180	30,000	Kilgore Sta.	Atreco
Atlas P. L. Co.	8	57	30,000	Footes Sta.	Shreveport
Gulf P. L. Co.	6	17	20,000	Lathrop Sta.	Connect to main line at Big Sandy Sta. in Upshur County
Gulf P. L. Co.	6	12	20,000	Kilgore Sta.	Connect to main line NW of Overton
Gulf P. L. Co.	8	8	42,000	Kilgore Sta.	Connect to main line SW of Overton
Humble P. L. Co.	8	35	45,000	Kilgore	Groesbeck
Doubled for 28 miles to Todd Station Looped from Todd to Groesbeck Stations					
Humble P. L. Co. 2–10		60	90,000	Longview Sta.	Moore Sta. on Standard P. L. Co.'s line in La.
Liberty P. L. Co.	8	45.6	27,500	Kilgore Sta.	Rusk Sta. in Cherokee Co. on Pure-Van P. L. Co.'s 10-in. main line
Magnolia	10	59	55,000	Kilgore Sta.	Center Sta. in Shelby Co. on Ark - Gulf Coast main line
Magnolia	6	28	20,000	Carthage	Center Sta.
Magnolia	12	100	70,000	Kilgore Sta.	Corsicana Sta. on main line to Beaumont
Shell P. L. Co.*	10	198	40,000	Kilgore Sta.	Houston
Sinclair-Texas P. L. Co.	12	88	60,000	Joiner Sta. SE of Arp	Colonels Station near Mexia connecting to Prairie P. L. Co.'s Mid-Cont.-Gulf Coast main line
Sun P. L. Co.*-Yount Lee P. L. Co.	10	200	45,000	Troup Sta.	Sun City on Gulf Coast
The Texas P. L. Co. ...	10	50	55,000	Joiner Sta.	Douglas Sta. in Nacogdoches County
The Texas Empire P. L. Co.†	12	200	60,000	Gregg County	Port Arthur
Texas-Independent† ...	10	197	45,000	Lathrop, Kilgore and Joiner areas.	Norsworthy Sta. on Houston Ship Channel
Total		1,600.6	784,500		

*Under construction. †Survey completed. Doubtful as to construction.

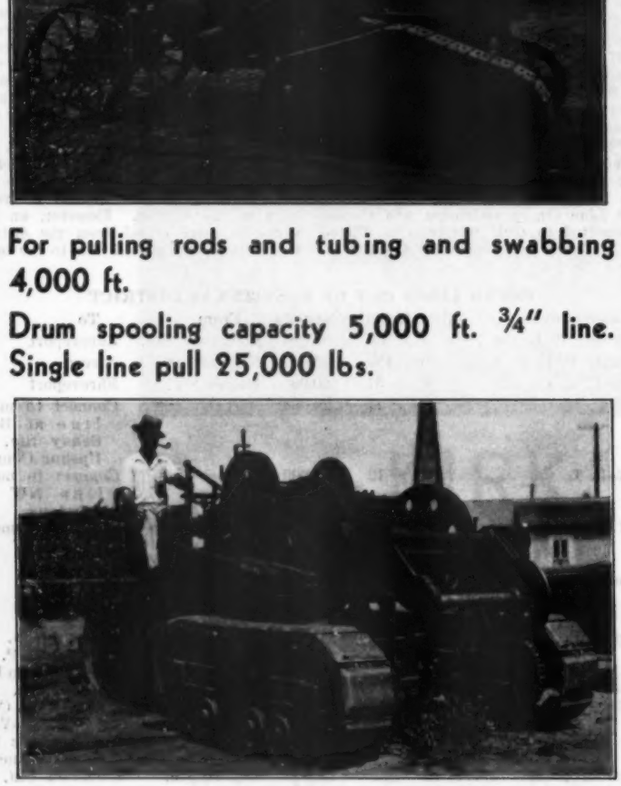
Number of lines completed, 14. Capacity, 544,500 barrels daily. Number of lines under construction, 3. Capacity 135,000 barrels daily. Proposed, 2. Capacity, 105,000 barrels daily.

WICHTEX
EAST TEXAS WINCH

The only Winch designed and built especially for the East Texas Field

For pulling rods and tubing and swabbing 4,000 ft.

Drum spooling capacity 5,000 ft. 3/4" line. Single line pull 25,000 lbs.



Winch with baling reel and spudding attachment.

Spudding attachment is not a jerkline or eccentric device, but is a real 40" spudding motion that will handle 5,000-lb. tools at 4,000 ft. for cleaning out or drilling deeper.

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pendents accepting the better prices for their oil, selling their production to the purchasing companies, and holding up building of contemplated storage.

Independent Refineries

Independent companies took the lead in constructing refineries in East Texas, there being only one major company now building a plant in the district, the Sinclair Refining Co. erecting a plant on its Moncrief lease between Camps Switch and Gladewater in Gregg County, located on the T. & P. Railroad.

There are 12 refineries in operation in the district at the present time, all of these owned by small companies or independent refiners. Total capacity of these 12 plants is 55,800 bbls. daily. Daily average runs to these plants last week was 31,460 bbls., showing that the plants are not running to capacity, probably due to lack of fuel oil contracts and outlet

REFINERIES—EAST TEXAS—1931

Company—	R.R. Connection	Process	Daily capacity	Operating constructing or proposed
Arrow Rfg. Co.	N Overton I.&G.N.R.R.	Skimming	2,500	Operating
Beacon O. & R. Co.	Henderson O.&H.R.R.	Skimming	2,500	Operating
Bell O. & G. Co.	Brodie Switch I.&G.N.R.R.	Cracking and Skimming	10,000	Constructing
Blue Ribbon Rfg. Co.	Kilgore	Skimming	1,000	Constructing
Boone Rfg. Co.	East Arp No R.R. conn.	Skimming	500	Operating
Central Rfg. Co.	Friars Switch O.&H.R.R.	Skimming	7,500	Operating
Constantine Rfg. Co.	Overton	Skimming	3,000	Constructing
East Texas Rfg. Co.	Friars Switch O.&H.R.R.	Skimming	5,500	Operating
East Texas Rfg. Co.	Longview G.C.&S.F.R.R.	Cracking and Skimming	12,000	Operating
Gladetex Rfg. Co.	Gladewater	Skimming	300	Operating
Gladewater Rfg. Co.	Gladewater	Skimming	500	Constructing
Indian State Oil Co.	Kilgore	Skimming	500	Constructing
Kilgore Rfg. Co.	Kilgore	Skimming	1,500	Operating
Overton Rfg. Co.	Overton I.&G.N.R.R.	Skimming	3,500	Operating
Primrose Rfg. Co.	Camp Switch I.&G.N.R.R.	Skimming	2,500	Proposed
Rusk Rfg. Co.	Overton I.&G.N.R.R.	Skimming	2,500	Operating
Sinclair Rfg. Co.	Gladewater	Skimming	2,500	Constructing
Slack Pet. Co.	Camp Switch T.&P.R.R.	Skimming	2,500	Operating
Taylor Rfg. Co.	Tyler Cotton Belt R.R.	Rowsey 5 units Skimming	15,000	Operating
Total			75,300	

Operating 12, 55,300. Constructing 6, 17,000. Proposed 1, 2,500. Total 19, 75,300.

MAJOR PIPE LINE GATHERING AND LATERAL LINES IN EAST TEXAS

Company—	Size pipe lines	Miles	Estimated capacity bbls.	From	To
Arkansas Fuel Oil Co.	6"	6	20,000	Lathrop Field	Shreveport Terminal
Atlas Pipe Line Co.	6"	17	17,500	Kilgore Station	Longview Terminal
Atlas Pipe Line Co.	6"	12	17,500	Kilgore Station	Joiner Pool
Gulf Pipe Line Co.	6"	6		Florence	Keeling & Station 146-1
Gulf Pipe Line Co.	8"	6.5		Griffin Station	Florence & Station 152-14
Gulf Pipe Line Co.	6"	10		Griffin Station	Fishburn Station
Gulf Pipe Line Co.	6"	7	72,000	Clemmons Lease	Fishburn Station
Gulf Pipe Line Co.	6"	2.5		Fishburn Station	Sheppard Station
Gulf Pipe Line Co.	6"	6		Bozeman Lease	Sheppard Station
Humble P. L. Co.	8"	12.75	20,000	Kilgore Station	Longview Station
Humble P. L. Co.	8"	14	20,000	Arp Station	Kilgore Station
Humble P. L. Co.	8"	2	20,000	Kilgore Pool	Kilgore Rack
Illinois Pipe Line Co.	6"	6	17,000	Joiner Pool	Arp Rack
Republic Prod. Co.	6"	4	17,000	Kilgore Pool	Reed Spur Rack
Shell Pet. Corp.	6"	3	17,000	Kilgore Pool	Kilgore Rack
Shell Pet. Co.	6"	4	17,000	Lathrop Pool	Willow Springs Rack
Shell Pet. Co.	8"	4	20,000	Elder Lease	Wills Lease
Simms Oil Co.	2-4"	4	24,000	Lathrop Pool	Willow Springs Rack
Sinclair-Texas P. L. Co.	6"	4	17,000	Kilgore Pool	Kilgore Rack
Sinclair-Texas P. L. Co.	6"	3	17,000	Joiner Pool	Friar Switch Rack
Sinclair-Texas P. L. Co.	8"	12	20,000	Longview District	Kilgore Station
Stanolind Oil Co.	6"	1	15,000	Kilgore Pool	Kilgore Rack
Sun-Yount Lee P. L. Co.	8"	12	17,500	Lathrop Pool	Troup Station
Thurber Pipe Line Co.	4"	5	15,000	Gladewater Pool	Gladewater Rack
Tidal Oil Co.	5"	10	7,500	Lathrop-Kilgore	Camp Switch Rack
Tidal Refining Co.	6"	25	17,500	Joiner Station	Beckville Station at Mag. P. L. Junction
Total		197.85	425,500		

for this by-product, or possibly due to lack of sales of gasoline, much of the gasoline from these smaller plants being disposed of at local filling stations, and these stations having reached the saturation point on East Texas gasoline.

There are six other plants under construction at the present time, these plants having a daily capacity of 17,000 bbls., while three other proposed plants will have a reported capacity of 13,000 bbls. Combined totals of the plants in operation, those under construction and proposed plants are 85,800 bbls., considerable more refineries and capacities than the West Texas district has ever known.

Railroads have been absorbing a great amount of fuel oil from the East Texas district on contracts made prior to the building of some of the plants, but the oil has given considerable trouble in handling due to its congealing at around 90°, and other contracts for the fuel oil may not be as easily obtainable as formerly, although other railroads, especially the Chicago, Rock Island & Pacific Railroad have been converting coal burners into oil burners since the price of East Texas oil and fuel oil from the district has been selling at such a low figure, and these roads may contract to take a vast amount of the by-product, thereby giving the refiners added markets which would not exist if the oil was not selling for such a low price.

The old Pierce Petroleum Co.'s refinery in Fort Worth, which was recently absorbed by the Sinclair Consolidated Oil Corp. when it purchased the former company, is another plant which is expected to process East Texas oil, engineers having already surveyed the plant preparatory to reconstructing or building it anew. If this plant is put into operation, as it is expected to be, a line will be laid from the plant to the Prairie Pipe Line Co.'s main line which is transporting oil north from Mexia for the Sinclair Pipe Line Co. A lateral may be tied into it at Weatherford or Cleburne Station, distances of around 30 miles in either case. Such a line, tapping the Prairie line, will furnish the old Pierce plant with its supply of East Texas crude for refining.

Louisiana, Arkansas and many Texas refineries are running on East Texas oil, this cheap oil having assumed priority over oil from pools in their vicinity, and eastern seaboard as well as Gulf Coast refineries are now running a great amount of this crude which has displaced crude from other districts in Texas.

EAST CENTRAL TEXAS

(Continued from Page 42)

but present appearances are against it making a producer.

McMahon and McCullough's No. 1 Hamilton in the M. Chandler Survey, Upshur County, north of present production, is still being swabbed in an effort to make it flow. On August 5 it made three heads totaling 100 bbls. of free oil, and then ceased flowing. It is evidently an edge well, and will probably have to be put on the pump if produced at all. Total depth of the hole is 3,327 feet.

The northeastern Gregg County outpost of Becker and others on the Barrett farm in the G. W. Witchie Survey also continues to swab. It had previously flowed by small heads, and was considered as good for a small well, but it too is an edge well, and may necessitate pumping which is now an expensive method of operation with oil selling for only 10 and 15 cents per barrel. Total depth is 3,647 feet. The Woodbine was topped at 3,639 feet.

Increasing Runs

As mentioned, some of the trunk line companies are increasing their runs from East Texas by looping their lines out of the district, paralleling their lines, and adding pumping stations. The Sinclair-Texas Pipe Line Co. is preparing to boost its daily transports from the district, and is now building a booster station at Jacksonville in Cherokee County and one 6 miles northeast of Turlington in Freestone County on its 12-inch line which connects at Colonels station in Freestone County with the Prairie Pipe Line Co.'s trunk line. These two stations are to be electrically equipped as is the main station in the southwestern part of the Joiner Field, Rusk County.

The Shell Pipe Line Co. is constructing a two-unit pumping station on the Smith farm in the R. F. Foote Survey, Gregg County, where the company has a tank farm. This station will serve on the 10-inch trunk line being built from Gregg County to Houston.

According to the last proration reports issued on the East Texas district, the district is given a daily allowable production of 268,753 bbls. per day, or only one-half of its present daily average. There are 1,470.5 units in the district, each unit allowed 170 bbls. per well for a full unit. Total of the Henderson district is set at 91,740 bbls. per day; total of the Kilgore district at 105,468 bbls. per day, and total of the Longview district at 71,545 bbls. per day. This report covers the current proration period, August 15 to 31.

SERVICES FOR S. B. MYERS

Funeral services for S. B. Myers, well known in Mid-Continent traffic circles were held Tuesday afternoon, August 11, at the First Baptist Church. He died Sunday following a major operation. He was formerly traffic manager of the Independent Oil & Gas Co. and the Allied Petroleum Co. and in 1929 was president of the Traffic Club of Tulsa.

All steel rig front on well made ready for pump in East Texas Field. Concrete floor in derrick.

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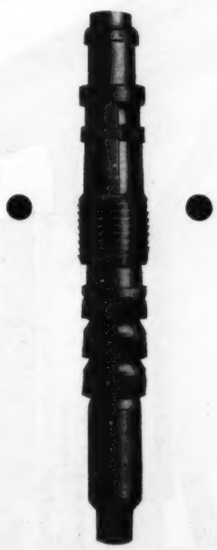

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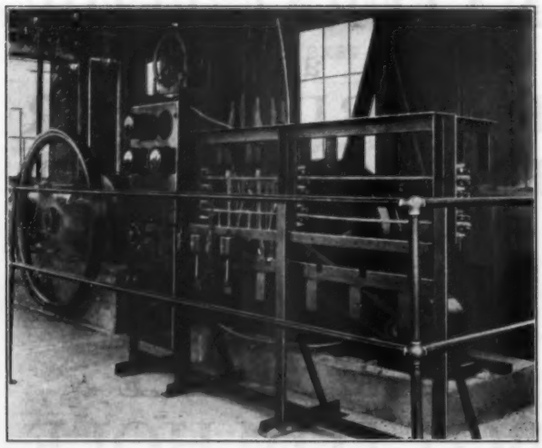
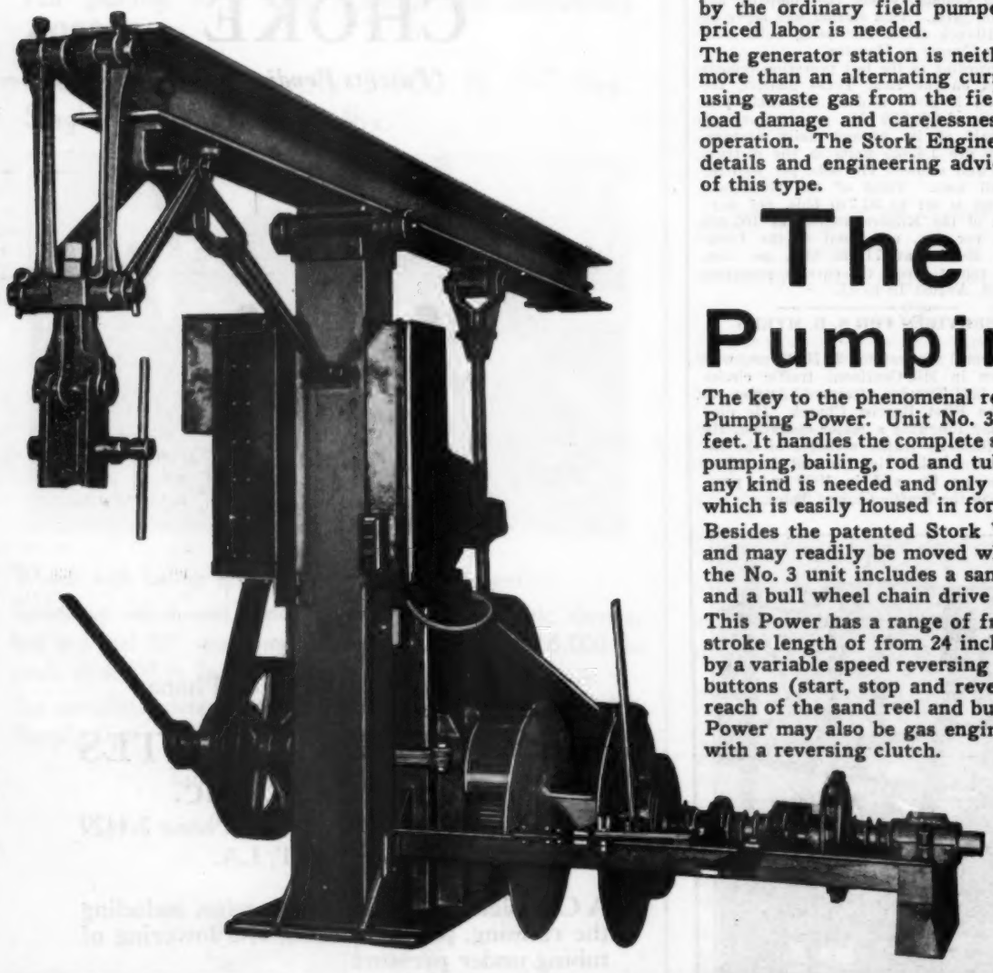


THE Stork system of community pumping is the most important development in this phase of the oil industry thus far achieved. It puts pumping and well servicing on an economical basis and eliminates the objectionable features of older methods.

Each Pumping Power has its individual electrical drive, operated from a field generating station or from a neighboring commercial power line. No band wheels—no pull rod breakage—no inertia to overcome as in the reciprocal motion of long pull rods—no pull rod friction with its large consumption of energy. Roads and water courses are no longer obstacles because wires carrying electricity can easily be strung to every well location over a large area.

Any number of wells from 12 to 100 within a radius of two miles can be pumped from a single field generating station and supervised by the ordinary field pumper without special training. No high priced labor is needed.

The generator station is neither elaborate nor costly. It is nothing more than an alternating current generator driven by a gas engine using waste gas from the field. It is fully protected against overload damage and carelessness. It is practically automatic in its operation. The Stork Engineering Company will furnish complete details and engineering advice for the erection of power stations of this type.



The Stork Pumping Power

The key to the phenomenal results of the Stork System is the Stork Pumping Power. Unit No. 3 serves wells with a depth up to 5000 feet. It handles the complete servicing of a producing well including pumping, bailing, rod and tubing work. No auxiliary equipment of any kind is needed and only a very limited working space required which is easily housed in for winter operations.

Besides the patented Stork Walking Beam, which is self-aligning and may readily be moved when a rod or tubing job is undertaken, the No. 3 unit includes a sand reel controlled by clutch and brake, and a bull wheel chain drive for pulling jobs.

This Power has a range of from 12 to 18 strokes per minute with a stroke length of from 24 inches to 42 inches. It is normally driven by a variable speed reversing electric motor controlled by three push buttons (start, stop and reverse) conveniently located within easy reach of the sand reel and bull wheel clutches. The Stork Pumping Power may also be gas engine driven when the engine is equipped with a reversing clutch.

Stork Pumping Powers operated by field generating stations have been in satisfactory operation for nearly two years. They have recorded remarkable economies and trouble-free operation. If you are interested in reducing your pumping costs and insuring continuity of operation, write for detailed information.

STORK ENGINEERING CO., INC.

SAGINAW, MICHIGAN, U. S. A.

Fire Accidents in East Texas Costly

Hazards Can Be Eliminated Almost Entirely With Exercise of Proper Care and Use of Approved Type of Equipment

There have already been several fires in the East Texas area resulting in the loss of life and property that have given rise to serious consideration of methods that could best be employed to prevent their recurrence in the future and reduce the fire hazard to a minimum.

Oil well fires have been occasioned at some wells by carelessness and in other instances the direct cause of the fire is still unknown but the danger is always there and every possible means of preventing other wells from taking fire when being brought in or produced should be applied.

One of the suggestions made by engineers is the use of high pressure master gates at the well head, together with tubing heads, so that complete control of the well may be had at all times. The well head pressures are not high but it seems that when the wells are first brought in there is a release of a comparatively large volume of gas along with the oil and this is what presents the greatest hazard.

At one well that caught fire it is reported the boilers had not been completely cooled before the well was produced into the slush pit and gas was blown into the fire box and ignited and flashed back to the well and set it on fire and three men lost their lives. In other well fires it is reported that some hard substance produced along with the oil and gas struck a spark against the casing head and ignited the well. In another instance it seems that some outside flame set fire to the gas that enveloped the property during the time the well was being brought in and set it on fire.

Whatever may have been the cause of these disastrous fires it is the opinion of safety engineers that they can be almost entirely eliminated in the future if proper care is taken and equipment of the approved type used. Haste to bring in wells in order that good reports might be made to share owners has been a contributing factor in some of the past fires and with the larger companies in charge of operations this phase of the fire hazard will be eliminated entirely for their operators will be concerned more with safety than a desire to make a good showing in completing a well.

Fire Fighting Methods

After the wells have caught fire about every known method of extinguishing them has been tried from shooting with solid nitroglycerin to the use of carbon dioxide gas. No universally satisfactory method has yet been devised but where it is possible to kill the well with mud laden fluid it is safest and most satisfactory when future operating conditions are considered.

The Sinclair Oil & Gas Co.'s No. 1 Cole, and Tulsa Oil Co.'s Kangerga wells were both shot out with solid nitroglycerin and while this method extinguished the fire it is now reported that the shot so damaged the casing that the oil is escaping through breaks in it to porous strata near the surface and damaging surface water wells.

Because of the fact that these oil well fires burn so close to the top of the casing it is necessary that the shot be placed low and its force is spent to a large extent downward and inside the casing. The Railroad Commission has raised an objection to this method of fighting fires and unless some other explosive that will not damage pipe in the well can be found it is quite possible that they will not be shot out in the future.

At the Bell and Graddy well fire a tunnel about 187 feet long was run from a near-by creek to the well casing. The casing was then perforated and mud and water pumped into the well and the fire quickly extinguished. This method as followed at the Bell and Graddy well is slow but if some means can be found to speed up tunneling it should be popular for it is quite safe and does not damage the well or casing.

Bell and Graddy's No. 1 Daniels on fire in the Kilgore Pool, East Texas.

Carbon Dioxide Used

On the Vitek Oil Co.'s No. 5 Eaton well a new system of fire fighting as applied to oil wells was tried but without success. Carbon dioxide gas has been used very successfully for smothering gas and oil fires on boats, in refineries and along natural gas lines and at natural gas wells. If released in sufficient quantities and under high enough pressure it will form a blanket around the flame and exclude oxygen and the fire will be put out.

In fighting this oil well fire there were several new elements introduced into the problem and while 200 drums of carbon dioxide were set up in two rows and so connected that as many as 100 drums could be released instantaneously at one time under a pressure of about 1,000 pounds at the cylinders the method of distributing the gas at the flame did not permit the envelop desired to be formed and consequently the fire was not put out by this method.

To prepare to use this gas at the Vitek well it was necessary to make out of old pipe and other material two movable racks to which were attached about 24 special discharge funnels or nozzles and the placing of them in such a manner as to permit the gas to be discharged at the base as well as high up into the flame at the same time presented a difficult task and as the result this trial demonstrated did not give the carbon dioxide a chance to do its work efficiently.

The system does present many possibilities and when proper apparatus is developed that will permit the equitable distribution of the gas throughout the whole flame it should be a quick and ef-

(Continued on Page 119)

EAST TEXAS DRILLING OPERATIONS NECESSITATE MANY WATER WELLS

In the East Texas oil fields the water needed for drilling and domestic purposes was at first secured from streams, ponds and shallow wells but as the summer season advanced these water supplies dried up and it has been necessary to secure deeper and more permanent sources for water.

The surface well was from 150 to 250 feet deep and usually drilled with light portable outfits and then cased and equipped with small pumping outfits or air lifts. The deeper wells are 750 to 800 feet in depth and require other treatment to make them suitable for long life operation.

On one of the leases in the Kilgore district a major company has had two deep wells drilled and equipped with vertical type centrifugal pumps driven with electric motors. The holes are 11 inches in diameter and about 800 feet deep but there were three good water sands passed through. The upper water sand in one well was found at from 370 to 410 feet, the second at about 440 to 480 feet and the lower sand at 742 to 795 feet. The 11-inch hole was carried through all three sands and then cased with 8-inch pipe and liners.

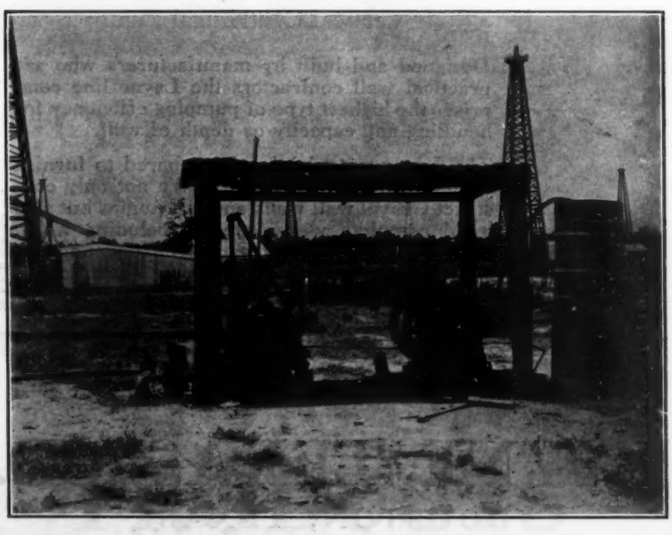
This casing had perforated sections opposite the water sands and between the hole and the outside of the liner the space was filled with "pea" gravel that had passed through one-quarter-inch and remained on one-eighth-inch screens. This gravel is shoveled into the space around casing and filled it from bottom to top of the hole and where the perforated liners are placed serves to hold back the water sand.

The water level is high in this type of well and the centrifugal pump is suspended in the hole and driven at high speed by a horizontal type motor placed over the top of the casing. The pump will deliver about 450 gallons of water per minute into the battery of 1,000-bbl. steel water tanks set to receive it. To move the water from the tanks to other points on the lease a motor driven centrifugal pump is used.

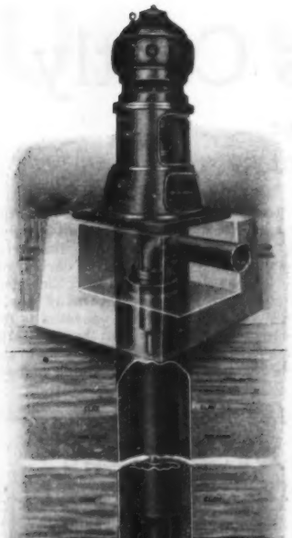
Centrifugal pump with electric motor on 800-foot water well on Humble Oil & Refining Co.'s Laird lease near Kilgore, Tex.

Other wells drilled to the shallower

(Continued on Page 110)



Small water well pumping outfit used in Henderson district, East Texas fields, consisting of small power jack and gasoline engine.



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PUMP PROTECTION

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By this construction the loose sand is removed from the water strata and replaced with gravel. This thick wall of gravel surrounding the Layne Screen prevents the formation of cavities which subsequently cause caving or complete well failure. It also acts as a filter bed to prevent sand from clogging the screen.

That this Gravel Wall construction produces more water is not a theoretical claim but actual facts as proven by comparative tests of identical wells in the same strata. Thousands of this type of water wells have been constructed throughout the world. They are recognized as the best wherever water is obtained from unconsolidated or loose formations.

Equipped with Layne Screen and Layne Vertical Turbine Pump, the Layne Gravel Wall Well is superior to any other type.

The Layne
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Designed and built by manufacturers who are practical well contractors the Layne line comprises the highest type of pumping efficiency for handling any capacity or depth of well.

The Layne organization is prepared to furnish complete water well service. We not only construct Gravel wall wells and sell pumps but also build complete well systems, including wells, pumps, motors, etc., and turn over to you a complete operating system, delivering a guaranteed quantity of water every twenty-four hours.

A corps of pump experts, hydraulic engineers and geologists are at your service. Write us about your water well problems.

LAYNE-TEXAS CO.

HOUSTON, TEXAS

HISTORY OF DEVELOPMENT AND GEOLOGY, EAST TEXAS

(Continued from Page 25)

new to the oil industry secured money or ways of drilling wells in this area and where they were located west of the now known shore line the wells have been productive. No wells within the actual pool have ever been dry, and as the drilling operations have been continued to the westward the water line has been developed which marks the western extent of production.

The field, now 11 months old, is defined along the western edge but to the north and south there is still open territory that may be productive. From the evidence now at hand it is estimated that the pool will contain about 90,000 acres in one continuous field. This estimate takes into account western edge conditions where water has been encountered. With one well to every 20 acres this will require over 4,500 locations to develop the whole pool, and there has already been completed over 1,300 wells, many of them upon small fractions and very few on tracts larger than 10 acres. Many inside locations on large leases are still undrilled and it seems quite conservative to estimate that at least 3,700 more locations will ultimately be made in this vast pool after making full allowance for agreements among companies to restrict offset locations to a minimum.

Geologic Formations

There has been much discussion as to the age of the producing formation and the origin of the sands from which the oil is obtained. At first they were classified as Tokio, Blossom and Woodbine with some holding the opinion that the producing horizon was the sand equivalent of the Eagle Ford shale that is found to the west.

After careful core studies of the sands from many of the producing wells it is now generally conceded that the formation from which the oil is coming is Woodbine in character. Some geologists think it is Woodbine sand in places while others hold to the theory that it is reworked Woodbine washed from the crest of the old Sabine uplift during Eagle Ford age and deposited in the form of a shore or beach sand along the edge of the Georgetown limestone which forms the cap rock of the Sabine uplift.

The producing sand bodies vary greatly in porosity from well to well and from one part of the field to another. It is stated that the range in sand porosity is from 10 to 27 per cent, but those tight sands below 15 or 16 per cent porosity are not productive of sufficient oil to make good commercial wells.

This range in porosity is due to some extent to the deposition of a volcanic ash erupted into the air from a chain of active volcanoes located southwest of the old shore line and also from others located to the north in what is now Arkansas. This fine volcanic ash, known as bentonite, must have been discharged into the air in great quantities and fell upon the still waters of the old sea and then settled among the sands and filled the pore spaces, thus reducing the capacity of those sands to hold oil and gas.

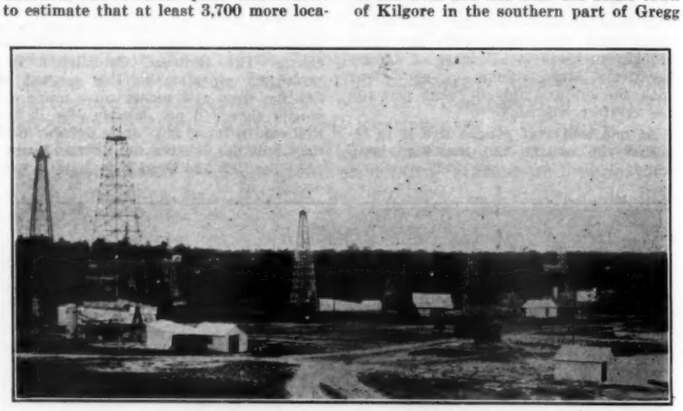
The estimated production per acre for this pool has been reduced from 20,000 bbls., as first thought possible, to from 12,500 to 15 000 bbls. per acre, but this estimate is subject to revision and can only be general for some leases have already produced in excess of 10,000 bbls. per acre. In estimating recoverable oil it is probably safe to take 90,000 acres at 15,000 bbls. per acre or a total of 1,350,000,000 bbls.

Recovery per acre will depend largely upon method of well operation, location of the wells on the structure, and porosity, and in addition to these factors the water movement through the sands will play an important part in ultimate yield.

Areas Defined

It might be well at this point to define roughly the three areas in this field as designated by the Railroad Commission. The north of Longview district is in Smith and Upshur Counties north of the Sabine River. It is the last district to be opened and is not yet fully outlined to the north, northeast and northwest.

The Kilgore district is the central area of the field and lies near the small town of Kilgore in the southern part of Gregg County but the field actually extends south into Rusk County for some distance. This was the second section of the field to be opened by Bateman's No. 1 Crim and its east and west limits are defined.



Wells prepared for pumping in the Lathrop Pool, Longview district, at north end of East Texas Field.

The southern or Henderson district covers the pool in Rusk and Smith Counties below an east and west line drawn through the town of Overton. It lies to the west of the Joiner discovery well and its southern boundary is not as yet definitely located.

The surface of the land in the East Texas fields is mainly low sandy hills, covered to some considerable extent with woods, and with sandy open spaces in between. In making locations for many wells and pipe lines it has been necessary to cut out a considerable amount of timber and underbrush.

Most streams have narrow channels with flat run-offs and when they are required to carry water following heavy rains the streams overflow their banks and cover the land. This condition makes a large portion of the surface a semi-marsh and for that reason it is difficult to get around on some leases even during comparatively dry weather. The Sabine River flows across the north part of the area from northwest to southeast and is the principal stream draining the region.

Returning to a review of the geological phase of the field, as previously stated the producing sand is of Woodbine age similar to that found in the Van, Fault Line and Boggy Creek Fields of Texas. It lies below the Eagle Ford shale which may have been the source beds for the petroleum which migrated into the porous sands and was entrapped in the closure formed by the thinning out of these sands to the east where they lie against the Georgetown lime and was held in place by the water drive from the west, north and south produced by the salt water known

to exist in the Woodbine formation in those directions.

This Woodbine water is known to be hot for in the Magnolia Petroleum Co.'s No. 3 Florey on the west edge of the Kilgore district it is reported to have had a temperature at the bottom of the well of from 155° to 162° F. This was a water well with only a small showing of oil. The temperature of the oil produced from many of the wells ranges from 90° to 130° F. and one well is reported to have oil with a temperature of 142° F. at the surface.

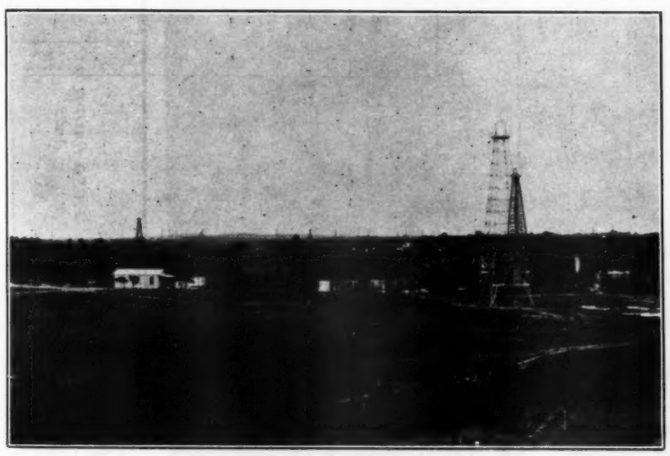
This body of hot water lying adjacent to and under the oil sands will have the effect of a cleansing medium and as the oil and gas is withdrawn from the producing horizon the water will move up dip to take its place.

Production Problems

Study of this phase of production is being made by some of the larger companies and it seems possible to determine fairly accurately the rate at which the oil can be withdrawn from the wells and the water still held in control in the formation. Some place this rate at as low as 200 bbls. of oil per well per day, although it is known that many wells are producing several thousands of barrels of oil daily.

The forces moving the oil to the well are compressed gas in the formation and hydrostatic head of the water accompanying the oil. It seems definitely proven that the amount of gas in the formation is limited to that entrapped in the oil at the bottom hole pressure of the wells. The hydrostatic pressure of the water alone is not enough to flow the wells.

The gas-oil ratio for most of the field is about 325 cubic feet per barrel of oil which checks quite closely with the amount that would be entrained in the oil at a bottom hole pressure of about 1,550 pounds per square inch—the measured bottom hole pressure for most parts of the field.



North end of Longview district, East Texas Field.

As the wells are produced the gas tends to escape as rapidly as possible and the bottom hole pressures will fall very rapidly if the well is flowed wide open for any appreciable length of time. In fact, the pressure will drop from 150 to 250 if a well is permitted to produce for even a few hours at full open flow capacity pounds per square inch at the casinghead in that time. When shut in the bottom hole pressures will again build up but after the well has been produced for a long period of time the bottom hole pressure will drop below the static head pressure, or below 1,200 pounds per square inch and the well will cease to flow naturally.

It has been established by study of logs of wells and examination of cores of the producing horizon that there is a slight west dip to the producing sand body. In the Kilgore district it has been found that at the east edge of the field or next to the contact between Woodbine sand and Georgetown lime the top of the sand is about 3,150 feet below sea level datum, while 3 miles to the west the top of the sand body is about 3,320 feet below the datum line. Surface elevations vary from 300 to 400 feet over the field so well depths are from 3,500 to 3,650 feet.

Care in Finishing Wells

With this dip to the west of about 56 feet to the mile in the central portion of the field and about 40 feet to the mile at the north and south ends, and with the water level established at about 3,315 feet below sea level datum, it has been found that great care must be taken in finishing these wells, especially those along the western portion of the pool, so that they are not drilled into water. It is reported that only one well has been finished below 3,315 feet below sea level datum without encountering salt water.

The companies who are using proper care in finishing their wells are selecting a casing point well above the water level and then coring in carefully are getting good oil wells. Some wells are only drilled into the pay a distance of 10 feet, thereby leaving 30 or 40 feet of sand between the bottom of the well and the top of the water.

In the early drilling campaign in this area little attention was paid to this water condition by many of the small operators then active in the field and as a result many wells have been drilled into the oil sand much too far and have since had water troubles.

Tests have been made recently that have established the fact that no well can safely be produced at its full open flow capacity without drawing in the salt water. Whether this water comes from below the bottom of the hole and cones upward or breaks across through the porous formation is not decided definitely at this time but that it will put in its appearance is definitely shown by the test made by E. V. Foran, engineer for the Railroad Commission on Humble Oil & Refining Co.'s No. 7 Crim.

This well was making approximately 2,500 bbls. of oil daily under back pressure flow conditions and when opened up to its full flow capacity of about 7,400 bbls. daily showed a salt water content along with the oil of about 10 per cent. This condition was brought about with only a 10-minute test and as the well was again pinched in the percentage of water decreased to zero as the original production rate was established.

Flowing this well at 2,500 bbls. per day may not seem to agree with the former statement that the average flow capacity of wells in this pool should be about 200 bbls. per day, but it must be remembered in making that statement the movement of the water in the entire field was being considered and not the effect of open flow upon one well in this vast area.

In the Wortham Pool in the Fault Line area of Central Texas it was observed that the salt water followed very closely upon the oil and a check made later in the field's history showed that 83 per cent of the oil had been produced in the

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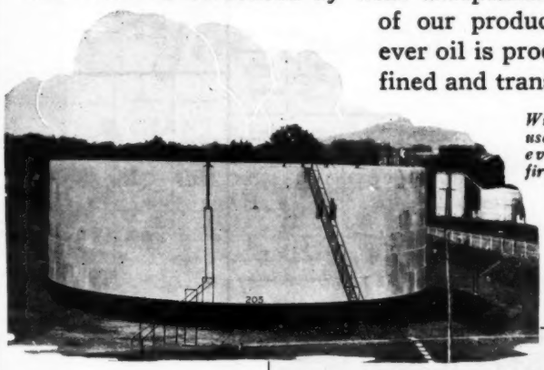
RIGID insistence on quality in design and fabrication has won for Horton products a record of outstanding satisfaction throughout the oil industry. The service resulting from these high standards insures the fullest possible measure of value.

Confidence in our standards of design, fabrication and value is evidenced by wide acceptance and use of our products wherever oil is produced, refined and transported.



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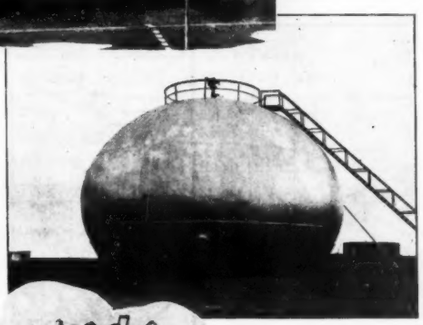

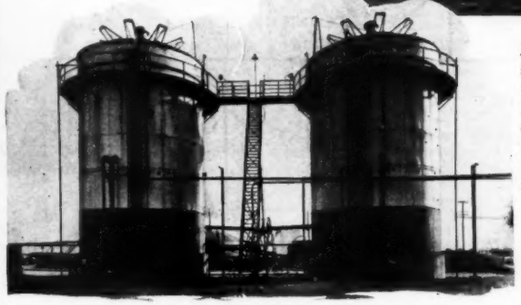

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HORTON PRODUCTS

OGJ 8-13 Gray

first 12 months of the field's life. These Cretaceous sand pools all give up their oil very rapidly if the wells are allowed to flow at full capacity, but under such operating conditions water encroachment cuts off a portion of the oil, whereas if the wells are produced at a slower rate this hot water will have a tendency to drive all oil ahead of it and thoroughly clean the sand body and in this way yield a high recovery per acre.

Large Companies Acquiring Acreage

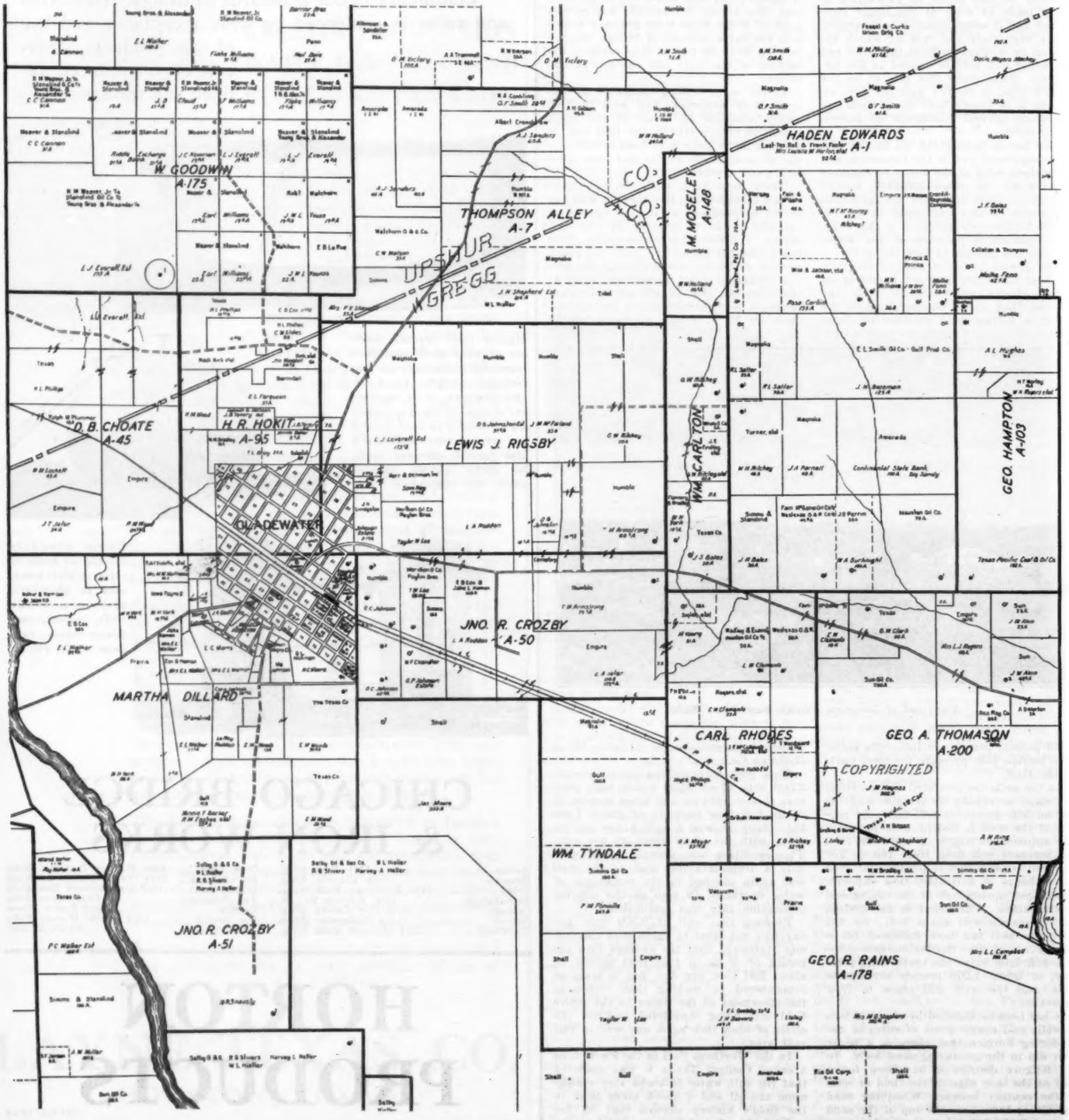
Since their poor start, the major companies and larger independents have secured a large portion of the acreage in this area, and it is reported by some that they now own as much as 85 per cent of all the proven territory in the northern part of the field with nearly as large a percentage of acreage in the balance of it. The independents are rapidly getting out of the business there because it has proven to be unprofitable to them to continue to operate and their dreams of quick riches with the bringing in of oil wells has been dissipated and they are selling out and moving on.

As the pool comes more and more under the control of those companies who have vast holdings in other pools and who intend to remain in the business indefinitely it seems that the production of oil from the area will be gradually regulated until the wells will be produced only at such rate as will permit of good operating conditions being maintained and the oil withdrawn at such a rate as to hold back bottom and edge water a maximum time and get all oil possible from the sands.

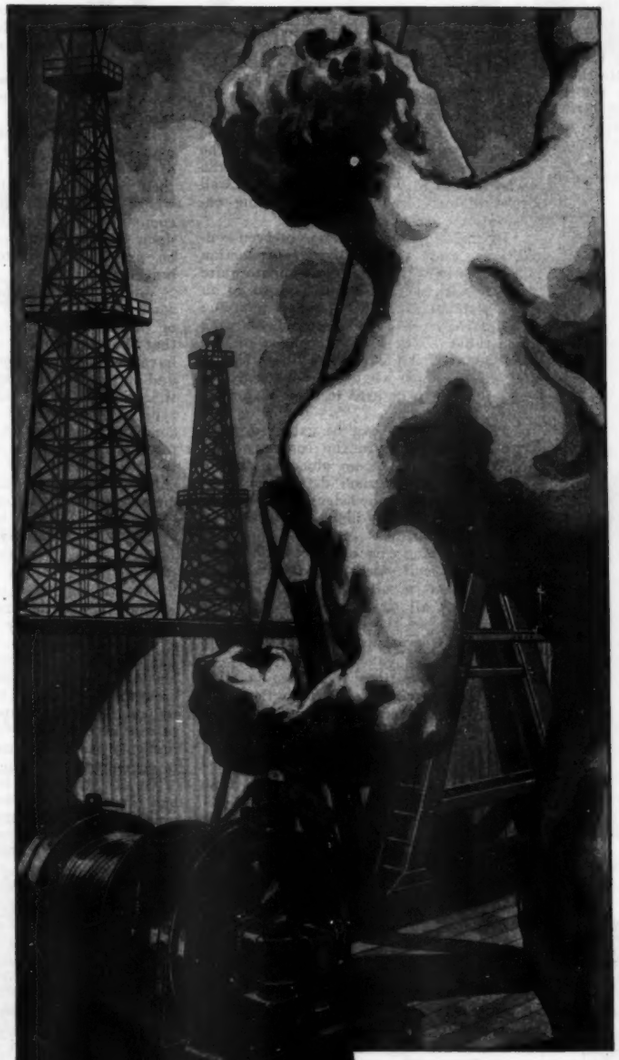
Under conditions of good production with wells limited to an average of about 200 bbls. each the pool will no longer present the menace it now does.

Under controlled production the life of this field should be continued for several years, but if wells are produced as they have been during the first few months of the history of this pool water will cut off millions of barrels of oil and the total recovery will be greatly reduced from that now estimated as possible. Out of 1,267 wells reported for the proration period of July 16 to August 1, 46 are already dead due to low bottom hole pressure and water encroachment. They are all in the Henderson district, the first to be discovered and drilled, and if that number of wells, equal to about 10 per cent of the completions, are reported as dead after about nine months' operation it is high time that control be placed over the balonce of the wells in this and the other districts to prevent other wells from being depleted too rapidly.

Map of the Gladewater Area in East Texas



—Courtesy Zingery Oil Map Co., Fort Worth, Tex.



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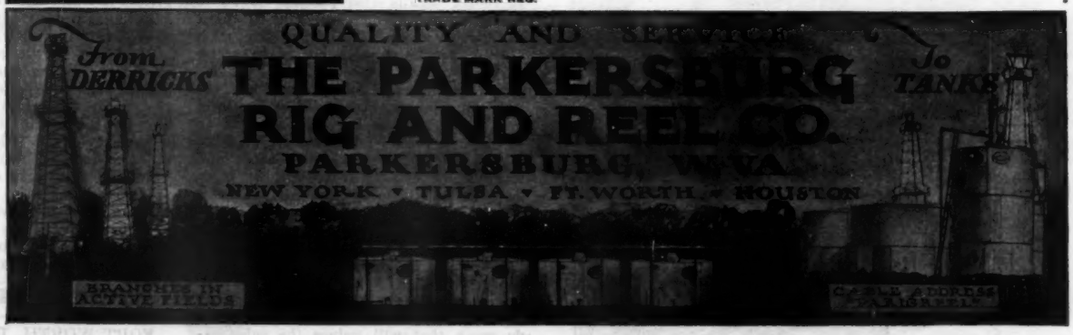
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NEW YORK ▼ TULSA ▼ FT. WORTH ▼ HOUSTON
BRANCHES IN ACTIVE FIELDS

OPERATIONS NECESSITATE MANY WATER WELLS

(Continued from Page 105)

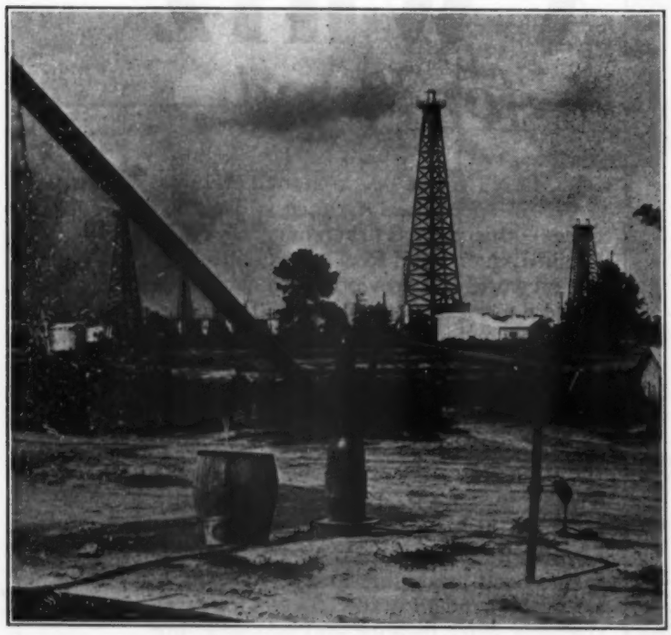
sand have been equipped with air lifts. One of them is 260 feet deep and air is supplied from a steam driven 10 by 10 compressor operated at about 55 pounds pressure and keeps a 1,600-bbl. wooden tank full at all times. This water has a slight iron taste and while good enough for boilers and other lease uses is hardly suitable for domestic purposes.

Other shallow wells are equipped with the small pumping jacks and driven by belt from small 4 to 6 horsepower gasoline engines. They are not costly installations and only deliver a small amount of water but as they are run almost constantly serve the leases where installed in a satisfactory manner.

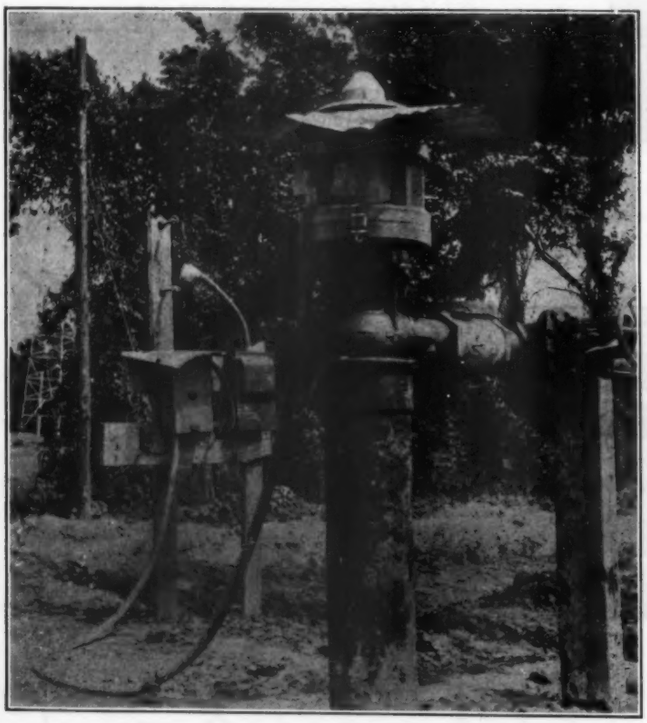
As the field is developed and more people come to live there the problem of securing suitable water for their consumption will become greater and various methods will be applied to solving this problem but what will be the best and lowest in cost, is not known at this time. Salt water from the wells will offer a problem in this connection for if it is turned loose into streams, or impounded on the lease, it is liable to find its way into shallow wells and ruin them.

Deep wells are relatively costly for the amount of water secured and the lifting cost but at this time they seem to be the best solution to this problem although it is probable that later same large water system will be developed for the various parts of the field and serve many leases and camps.

Manufacturers of all kinds of equipment for securing and handling water will do well to give this area close study and working with engineering departments and lease men to assist in solving their water problems may expect to enjoy a considerable volume of business in the future.



Air lift water well on Lide & Tayloe lease in Henderson district, East Texas fields furnishing water for lease purposes from 260-foot well.



Water well pump on Shell Petroleum Corp.'s Elder lease, Kilgore Pool, Gregg County, Texas, driven by 40-horsepower motor. Well 880 feet deep and pump furnishing 550 gallons of water per minute.

FUTURE POSSIBILITIES OF THE EAST TEXAS FIELDS

(Continued from Page 39)

leaving from 250 to 350 pounds working or top hole pressure. As the wells are all equipped with gauges on the christmas trees it is possible for the man who desires to know conditions at a well to find out for himself by making observations periodically.

By making notes of these observed conditions and also studying production practices it is possible to anticipate quite closely when the well will have to go on the beam. This will tell when pumping equipment will be needed and knowing something of the characteristics of the individual well the sales engineer should be able to judge what equipment such as he handles can be used to good advantage there.

This knowledge can be gathered without any reference to the company man for there should be no objection to the salesman learning such details for himself. With this knowledge he should be prepared to notify his home office of prospective business and make preparations for taking care of it as it develops. This will permit stocks at the warehouses to be held at a minimum and still have on hand at all times sufficient material to take care of the customer's needs.

Operations Checked

While the above suggestions apply to production operations it is also possible for salesmen who are alert to their opportunities to keep close track of new locations, and drilling operations. Offset wells will be drilled in the majority of cases to protect as much of the producing sand as possible. This means that the larger companies will spot locations carefully and hold the number of wells drilled to a minimum. Some drilling programs will be worked out months in advance of the actual work and such information may be made available to sales representatives if the lease man and superintendents are properly handled.

With such knowledge and some idea of the amount of oil being produced by the individual company and its outlet for same it will follow that the rate of new drilling will be gauged by the needs for new production. A study of old production and its rate of decline will give some clew to the new work to be done and permit field men for supply companies to anticipate the buyer's requirements well in advance of his actual needs.

By following such methods it will mean that the stocks carried in supply stores and warehouses can be held at a minimum in the district and the manufacturing details also planned so as to make up sufficient equipment to meet the field's needs.

Such practices are going to be necessary for only by close co-operation between manufacturers and users will the prices for equipment be held at low level and it must be so held in this area as the amount of oil and price received for it will not justify reckless spending and unnecessary drilling if real profit is to be made by the producing companies in the territory.

The field is now practically outlined, points for distributing supplies established, railway service known and by a consolidation of this general knowledge into a complete survey of a sales company's campaign it will be possible to do much that will reduce the sales expense to a minimum.

It is going to be quite essential that a sufficient number of salesmen be employed in this district at all times to properly cover it and care for the customer's needs, but this does not mean that the buyer should be annoyed by constant solicitation from the salesman for, as stated above, it is possible for them to gain much first-hand knowledge of operations by their own efforts and then by making a study of this information, know when to make calls that should be productive of orders rather than make a great number of daily calls without results.

A full and complete knowledge of the field's possibilities, its pecularities, the character of the producing formations in each area and upon each lease, and the general policy of the operating company is going to be very essential to everyone who hopes to be successful in selling material in this field.

It will also be necessary for the field man to keep his home office fully advised of developments and they in turn notify their representatives located in the cities where the headquarters of the producing companies are maintained so that calls upon engineers and production men can be properly timed to bring about the best results.

Where major operations are planned some time in advance in the home office of production companies it is necessary that the engineers in charge of this work have before them complete specifications and data covering material. They have time and desire to learn about the best type of equipment of all kinds for their company's needs and, if the field man for the manufacturer is well informed as to the application of his particular machine or piece of equipment to the producer's problem and can transmit this to the engineer, it will be quite acceptable.

Unitization

There is some talk of unitization in this pool and it has been advocated by many. It may not come to pass, but without doubt the major operators are going to operate their properties there in a systematic manner, and if the manufacturer or supply company hopes to get his share of this business he, too, should organize a carefully worked out and intelligently planned campaign and attempt to aid in every way possible in supplying only such equipment as best suited to economic development and production.

To say that there is no business to be had there is unwise, but to get this business will require careful planning and attention to detail now and while East Texas has so far been operated in a rather chaotic manner it is safe to predict that it will be quite the reverse in the future as the larger and more experienced companies get it under their control. The small operator without past experience in producing oil and without any incentive other than to get rich quick is rapidly disappearing from the field simply because economic conditions in other pools make it impossible for East Texas to be operated on other than the best and most scientific basis and from all indications such an era is just ahead and the wise manufacturer will be prepared for it just as the experienced oil producer is now preparing.

Low prices for the oil produced will not long continue for such a condition is economically unsound, and with an increase in value for this production safe, sane and orderly development of this vast field will follow.

With the knowledge gained during the past few months much can be planned and from past experiences in other fields the supply companies and manufacturers have learned that it is their place to take care of the field man's needs and the producing companies have also learned that it is not economical for them to try to stock vast quantities of materials in their own warehouses, and will therefore look to the responsible supply companies and manufacturers to take care of them as needs develop.

C. R. EASTERLY DIES

FORT WORTH, Tex., Aug. 8.—C. R. Easterly, 52, district manager of the Mid-Kansas Oil & Gas Co., died at his home in Rankin from heart attack. Mr. Easterly had lived in Rankin for five years, in charge of production for the company in the Yates Pool, Pecos County, which is about 22 miles south of Rankin. His old home was in Findlay, Ohio.

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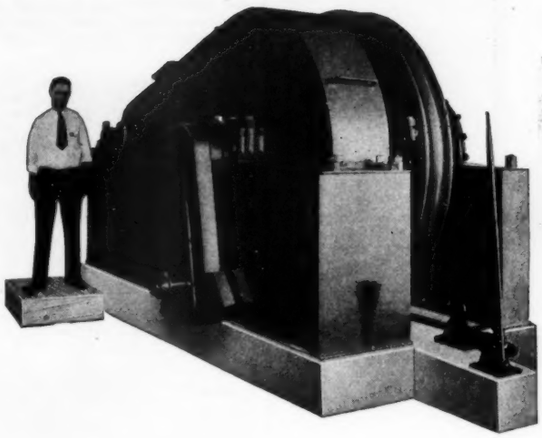

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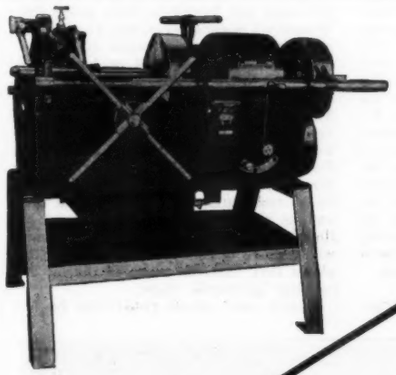

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LEASE STORAGE AND GATHERING LINES

(Continued from Page 34)

lines it will be necessary for gathering systems to be installed on all leases or group of properties and it is probable that there will be a very steady demand for this type of equipment for some time to come.

Ditching is done largely by machine but over a good portion of the right of way it is necessary to clear out timber and underbrush and pipe line work will therefore require careful planning and if duplication of gathering systems is to be avoided location of tank batteries, wells and gathering pumps will have to be carefully worked out in advance of drilling.

The field will present a good market for separators, steel lease tanks, flow tanks and treating tanks, complete with steel run and stairways, gas-tight fixtures and stacks; also steel towers for separator stands; valves and fittings for pipe line connections and gathering pumps to move oil from lease to rack or trunk line. Some of the batteries installed during the early part of the field's development may become available for resetting on later drilled leases, but on the main it is thought that new material will be needed in the majority of cases in the future development of this field.

Pit Storage

At one time there seemed to be some tendency to consider the use of large storage pits for the storage of oil on leases in this field but with the rapid increase in outlet pipe line capacity and the large amount of empty steel storage available along major trunk line systems it hardly seems probable at this time that storage reservoirs will be actually built in this field.

If such storage is built it would be necessary that the pits be lined with some impervious material such as cement or steel plates for the soil is for the most part sandy, and where rock is encountered it is a very rotton red sandstone kind that will permit the oil to escape rapidly into the ground.

Oil engine driven pump used for gathering oil in the Joiner Pool, East Texas fields.

For concrete-lined storage if used it has been estimated that it will cost about 25 cents per barrel, a high price when 10-cent oil is considered, but another type of lining has been proposed to be made of either welded, riveted or bolted steel sheets laid in two thicknesses with spacers between the top and bottom liner. This type of construction would permit light plate to be used and no bottom liner would be needed for the pit as it would first be flooded with water and this water would be forced up between the two steel liners and equalize the pressure on them and as the oil was pumped in and the fluid level within the pit raised this water would move up in the space between the plates that form the walls of the pit and equalize pressures there.

Bolted steel sheets could also be laid

Bolted steel gasoline storage in East Texas Refining Co. yard, Friars Switch, Rusk County, Texas.

At left: Sectional view, Fig. 879, Jenkins Extra Heavy Iron Body Double Disc Parallel Seat Gate Valve, Flanged. Outside screw and yoke, rising spindle. Above: View showing the upper and lower spreaders and the two discs comprising the closing mechanism. Two crowned bearing surfaces are located on the back of each disc.

Perfect contact, uniformly tight all around

A UNIQUE design in the disc and spreader construction makes possible leak-tight closing in this new Fig. 879 Jenkins Iron Body Double Disc Parallel Seat Gate Valve.

The two spreaders are wedge-shaped. When the valve is being closed, the upper spreader is forced down and made to slide upon the lower spreader. The result is a pressure which is exerted on each of the two parallel discs, driving these discs against the seat rings in the body. This pressure is uniform all around the disc. It is evenly distributed, because of the two crowned bearing surfaces on the back of each disc, against which the spreaders are pressed.

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down with gaskets between seams the same as in bolted steel tanks and form a tight liner for sand pits or reservoirs and water could be used on the bottom and replaced at the rate of loss by seepage into the ground.

These same type pits may have some consideration in connection with handling of salt water for in some places unlined reservoirs may give trouble because of seepage of water through porous streaks in the surface formation into water wells and streams that will later cause damage suits. The steel could be covered with any good type pipe line coating to retard corrosion and the liner might justify its expense if it would prevent contamination of sweet surface water.

While the salt water problem will be one of major importance in the future as outlined in L. E. Bredburg's article in this issue at this time only preliminary consideration has been given it but it does present possibilities for use of many kinds of equipment and manufacturers should be giving it their consideration now to be prepared to meet customer's requirements later.

DRILLING PRACTICES AND METHODS ARE IMPROVING

(Continued from Page 26)

the Austin chalk and in cases rock bits were used all the way. Fishtail bits were also used in making hole in all formations for there are only a few hard streaks encountered.

Many of the wells were drilled in very quick time from the cement plug in the surface casing to the top of the pay. Some reports of as low as 48 hours' drilling time have been received, for this distance of about 3,200 feet. This tendency on the part of some to hurry up drilling has resulted in some crooked holes, but since the drillers have become more accustomed to the work the holes vary little from the vertical, and where the contract permits the producer to make check on the hole when desired it has been found that the deflection is usually below 5 degrees from vertical and in many cases it has been as low as 2 degrees.

Drilling Costs

During the early days of development in this field contractors obtained from $2.50 to $3.50 per foot of hole but later this price was reduced to as low as $1.75 per foot with an average of about $2.25 per foot paid. The usual contractor's check for a well now is from $8,000 to $9,000 and the wells are being completed in about two weeks from time they move onto the location.

The cheap wooden derricks first used costing from $750 to $1,000 are now almost a thing of the past, especially among the larger companies. It has been learned they are really not economical for windstorms have blown many of them down and some have been pulled in. The average steel derrick is selling for about $2,000 erected and is of the 96-foot A.P.I. type, suitable for both drilling and pumping.

For most drilling operations fuel oil is used to generate steam and it has cost all the way from 10 cents per barrel upward to about 75 cents. It is reported that in some cases in the early operations the promoter made arrangements to borrow his fuel oil from his neighbor and paid it back in kind when his well was completed.

With power lines covering the greater portion of all the pools there have been several wells drilled with electric power. Gas has also been used in a few cases where it was available from near-by wells but in the main this form of fuel is not available.

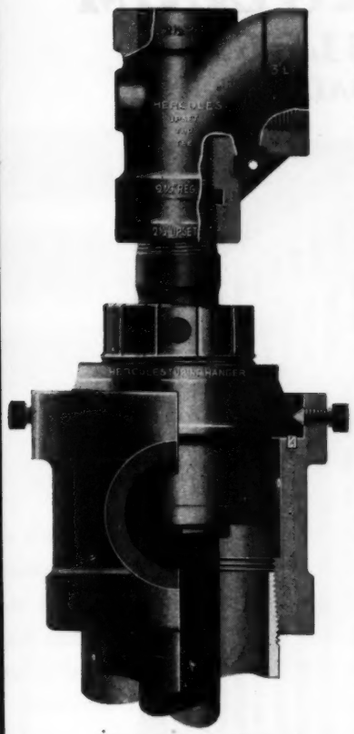
Surface casing, 10 and 12½-inch size; also flow string 6⅝ and 7-inch size is now for the most part new, but much old material has been used in these wells by those who were operating on little capital. It is reported that at least in one well a string of 6-inch drill stem that had been condemned as such was used to case the well. The tool joints were removed and collars welded in place.

It is the rule to run either 2½ or 3-inch tubing as soon as the well is drilled in and it is common practice to bring the well in by washing through tubing. In some instances this method has failed because of the wash water channelling through the mud and it has been necessary to swab the well into production.

To meet this condition it is reported that one crew has rigged up a tractor

Well head and oil and gas separator on East Texas flowing well. One of the early wells.

This "HOOK-UP" Best for Pumping Wells



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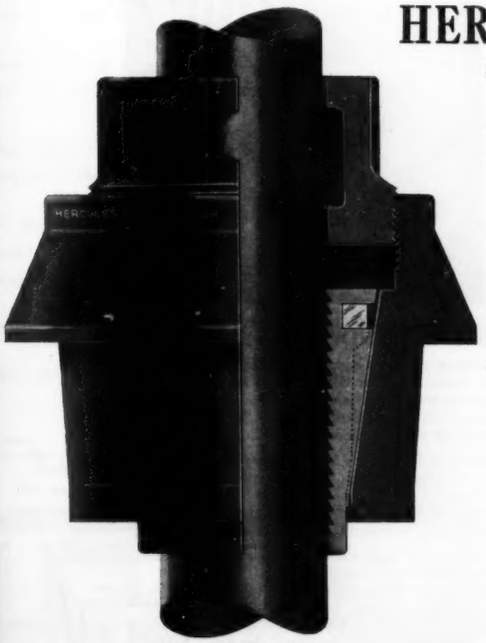

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winch and did the work for about $50 per day, and as it usually takes only about one day's time to finish the well in this way it is much cheaper than swabbing in with the rotary at a cost of from $150 to $200 per day.

In completing the well it is the usual practice to set up all surface fittings and christmas tree and make connections to the oil and gas separator where one is used, or to the flow tank in some cases, and then wash or swab the well until it begins to flow. The valve on the line leading to the slush pit is opened when the well starts to move the mud from the hole and this fluid is permitted to blow into the slush pit until the oil shows, when the valves on the line to separator or flow tank are opened and the well permitted to produce into it.

Cementing Practice

Where the 11-inch hole is drilled from surface string to top of the pay and the 7-inch casing used there has been a wide variation in the amount of cement ordered run back of the casing. This amount is reported as from as little as 150 sacks up to as high as 600 sacks with an average of about 225 sacks. In this size hole with 7-inch casing the average amount of cement would fill back of the casing about 500 feet of linear space according to a table prepared by the Mineral Division, Department of Conservation, State of Louisiana and published in the Cementer of December, 1929.

It is reported that some trouble has been experienced in cementing some wells because of the character of the mud fluid in the hole. The wells are drilled with natural mud and when they penetrate the Austin chalk formation this material forms a fluffy mud mixture and to add to the difficulty at times it has been found that it was cut with oil and gas because the well had been drilled too deep before the casing was ordered set and cemented.

The mud used in ordinary drilling practice is not very heavy, ranging in weight from 8 to 10 pounds per gallon although it sometimes has the appearance of being much heavier. This is occasioned by the peculiar heavy, thick character of this natural mud and sometimes is augmented by the lack of proper proportions of water due to shortness of that fluid for drilling operations.

It does not seem necessary in this field to use any of the admixtures for the mud fluid used in other areas in as much as the bottom hole pressure is not great and if the well is properly completed it can be washed in successfully after the drilling operation is completed.

The cost of a well under present conditions is estimated at about $16,000 to $18,000 and it will cost about $4,000 to $4,500 additional for lease pipe lines and steel storage tanks, making the well cost about $20,000 to $22,500 completed but without pumping equipment.

It is admitted that these figures may not apply to all wells for many have been drilled with the outlay of very little or no cash as the drilling contractor and others have agreed to take their pay in oil when produced.

For equipping the wells to pump it is estimated there will be an additional outlay of about $5,000 although this figure will also vary over wide ranges where second-hand equipment is used, and also vary depending upon the type of power used for pumping.

Where wells are properly equipped and drilled and then prepared for pumping they will cost from $25,000 to $27,500, a reduction from the prices paid for the first wells of about $5,000.

Future Practice in Field

Profiting by the mistakes made by the operations in this field it is now the practice of the larger companies to carefully work out their drilling campaign well in advance of actual operations and to this end the problems are usually referred to the engineering and production departments for complete reports and analysis of the conditions on the leases to be drilled.

As the field is so large and under any drilling campaign will require 4,000 or 5,000 more wells to develop, it is desirable to reduce the number of offset wells to a minimum.

In the past many locations have been made only 150 feet back of the property lines and as many as six wells drilled on five and six-acre areas. This has been due to the tendency of the offset owners of closely spaced wells to locate their wells on the same spacing and when they are all finished it has been found that about one well per acre has been drilled.

Such close spacing is not warranted by the character of this sand and its production per acre and it is therefore fast becoming the practice for the major companies to consult with their neighbors about drilling locations and so space their wells that the least number possible will have to be drilled to reclaim the oil from the area.

This practice is logical and will lead to a considerable saving in drilling up the remaining acreage in this field and at the same time by properly spacing the wells it will be possible to get high recovery from the sands and good returns upon the investment.

Speed in completing the wells is no longer looked upon as essential although with a better knowledge of drilling conditions the drillers are now able to take every advantage of underground conditions and make good progress. This care in drilling is making for straighter holes and this will in turn result in better

Transformers mounted on wheels used with electric rotary drilling outfit now on its third well in the East Texas fields.

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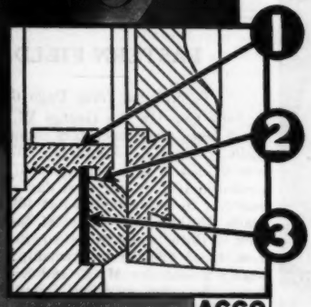

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City_____ State_____ OJ-8

pumping conditions when the wells no longer flow naturally.

Because of the fact that most of the old material available at reasonable costs from other fields has already been moved into the district and used it is thought that from now on only new equipment will be used in completing the wells, and this will all be of the best quality for it has been forcibly brought home to many operators that it is not economy to take unnecessary risks in drilling or producing these wells for the sake of saving a few dollars in capital investment.

Fire hazards will be reduced as much as possible for there have been several serious fires in the past and in some cases proper judgment and care could have prevented them. Cleaning up around the lease while drilling and removal of timber, brush and high, dry grass is now common practice and other safety measures are being introduced to make operations much safer.

The whole trend of drilling activities is toward a more orderly procedure and since promoters and speculators find that there is no profit in operating in this territory and are rapidly moving out and leaving the field to those who intend to develop it with the idea of lowering initial investment and securing maximum returns upon their money, as well as a maximum recovery of the oil, there should be a good market there for all types of proven drilling and producing equipment for a long period to come.

Electric motor drilling outfit on Humble Oil & Refining Co.'s No. 9-A Plowman, Joiner Field, East Texas.

EASTERN FIELDS

(Continued from Page 65)

& Sons Co. On the George W. Packard No. 1 lease, these operators completed two wells, their No. 15 and No. 16. No. 15 was drilled in at a depth of 367 feet and produced 10 bbls. the first day after shot, and No. 16 was completed at 409 feet and made 15 bbls. the first 24 hours after shot. Both wells were in Section 13, Lot 4, of Chatham Township. On the highly productive M. A. and Eva Franks lease, the same operators completed their No. 22 on Lot 20, Section 16, Chatham Township, to a depth of 452 feet. It produced 12 bbls. the first day after shot.

In Washington County the Zwingle Brothers drilled a test on the Michel Edwards farm on Ohio River Route No. 7, Section 28, Newport Township. It is a Berea well at a depth of 1,536 feet, which made but one-half barrel the first day natural, which later was increased by shot to 5 bbls. a day.

Drilling in Ohio

In Vinton County, the Co-operative Oil Co. is down to 700 feet in a test drilling on the 65-acre lease of the Cameron S. Clark farm in Section 5, Knox Township. In Noble County, Way Wickens and others have started their second well on the J. M. Rowlands farm, Section 32, Enoch Township, and have reached 300 feet. In Section 8 of Sharon Township, Charles Knott and others are down to 875 feet in a test on the Moody Archbold farm.

In Washington County, Homer Newhart and others are drilling on the Ernest Lisk farm in Section 3 of Ludlow Township. It is drilling at 300 feet. In Medina County, E. R. Edson & Son Co. are continuing drilling operations on the Franks, Packard and Yoast leases in Chatham and Fitchfield Townships, and Curtis and Eaker is continuing on the Thomas Brown, Jr. lease. There are no tests drilling in this shallow sand district at the present time.

WEST VIRGINIA

The survey of the West Virginia Field showed five gas wells completed and two dry holes reported. There were no new oil producers drilled nor are many expected as the wells drilling are confined to the gas areas.

The best gas well in this district was probably the second test of Park Bowser and others on the M. Wilson farm on the waters of Yellow Creek, Center district, Calhoun County. It was completed in the Maxon sand and is showing for 500,000 feet. In the same district, W. H. Bickel drilled a test well on the I. A. Gainer farm which proved to be a dry hole. McCall and others had a similar result in their No. 2 well on the Fletcher Trout farm in Center district, Gilmer County. This well was drilled deeper to 2,585 feet and in the 50-foot sand which was barren.

In Kanawha County, Godfrey L. Cabot completed his No. 5 on the William P. Tomkins farm in Malden district to a depth of 2,439 feet in the Berea sand. It is showing for a small gas well. In Wetzel County, the Lomie Oil & Gas Co. drilled a test well on the Lomie Hunt farm in Church district to a total depth of 3,199 feet and in the Fifth sand. It will make a gas well.

In Wyoming County, the Ritter Lumber Co. drilled a second test on its own property in Center district to a depth of 4,028 feet. It is estimated at slightly in excess of 100,000 feet, 24 hours after shot. In Marion County, Funk and Glover are continuing to drill deeper their old No. 3 on the Rebecca Glover farm in Mannington district. It is now drilling at 3,407 feet. The Gordon sand was found between 3,378-85 feet with a showing of oil and gas on the top of the sand.

The top of the Fourth sand was reached at 3,405 feet.

Drilling in West Virginia

Among the new operations is listed a location by the Monickel Gas Co. on the E. S. Jacks farm, Grant district, Cabell County. In the same county, two wells are drilling. One, the test of the Madison Gas Co. on the Nelson Holton farm in McComas district, has reached 1,230 feet, and the other, the test of Wilson & Mowery on the Hans Watts Realty Co. lease in Guyandotte district, is down to 650 feet. In Barboursville district, the West Virginia Natural Gas Co. is about in the sand on the Etta Bowen farm. In Grant district, operations have not started at the Harshbarger Oil & Gas Co. rig on the J. A. and Oscar Conner farm.

In Wirt County the Heck Oil Co. is down to 400 feet in No. 3 on the J. E. Watkins farm in Reedy district. In Burning Springs district, R. C. Wagoner & Co. have a fishing job at 2,100 feet in their second well on the William Lieving farm. In the same district, Fred Morehead has spudded in and started drilling No. 8 on the J. W. Heckman farm, and L. E. Shuck and others have their No. 10 on the W. H. H. Wheaton farm drilling at 640 feet. In Clay district, Pollack & Myers have started a test on the Pollack & Myers property and have passed the 200-foot level. In the same section, H. O. Davis is about due in with his No. 10 on the George S. Lemon farm, and Garrity & Burke Oil & Gas Co. have a rig standing for No. 7 on the J. L. Showalter farm.

In Wayne County, the Chartiers Oil Co. has started drilling their second well on the George W. Ronk farm in Butler district. It is drilling at 450 feet. In Lincoln district the Wayne United Gas Co. has shut down its No. 40 on the A. W. Wilson heirs farm after reaching 1,720 feet. The Owens Bottle Co. has made a location to drill in the same section and on the T. A. Copley farm. In Hancock County, Charles Spreggs is shut down at present in his test on the W. L. Smith farm, Clay district, after reaching a depth of 2,490 feet. In Clay County, C. F. Wilson and others are about at the 1,600-foot level on the A. B. Hersman farm in Henry district. This may make an oil well.

In Doddridge County the Travis Brothers are drilling on the C. A. Sutler farm in Grant district. The well is approaching the 1,000-foot level. In Lewis County the Hope Construction & Refining Co. has reached 1,650 feet on the J. A. Crothers farm in Collins Settlement district. In Court House district, W. C. Johnson has a rig standing on the John Brown farm.

SOUTHWEST PENNSYLVANIA

Two small gas completions was the total of a week's drilling in the Southwest Pennsylvania Field. The operations in this district are at the lowest point in the history of drilling. In Center Township, Greene County, the Carnegie Natural Gas Co. completed its test on the F. G. Jacobs farm in the 50-foot sand at a depth of 3,199 feet. It will make a very light gas well. In the same township, George Drake and others drilled their test on the Dean Piatt farm deeper to 2,800 feet and the Gordon sand. There is a small flow of gas from that formation. The other well in this township, the test of J. B. Orndoff on the J. E. Scott farm, has been shut down at 2,200 feet on account of casing trouble. In Wayne Township, the test of D. L. Shafer & Co. remains shut down at 850 feet on the William Jones farm.

In other counties in this field, the following work is noted. In Allegheny County the Harold Oil Co. is down to 1,800 feet in a third well on the J. Minich farm in Robinson Township. In Beaver County the Hoff Oil Co. is drilling at 1,000 feet in a second test on the James McCoy farm, Independence Township. In south Butler County, Morrow Dunlap & Co. have shut down at 1,460 feet on the William Johnson farm, Cranberry Township. In Washington County the Rapp Oil & Gas Co. has reached 1,560 feet on the Samuel McCauslin farm, West Bethel Township, and has temporarily shut down.

FIRE ACCIDENTS IN EAST TEXAS COSTLY

(Continued from Page 105)

ficient means of killing fires of this character.

This well was finally killed by pumping water and mud into it through the tubing and it is reported that connection of the water line to the tubing was made with the aid of a power shovel that was moved near enough to the flame to carry the pipe over the hole and place it there and after the pumps were started the fire was killed in 59 minutes.

From all past experience with fires in this area it seems that the use of mud laden fluid in killing them is the best and most practical method and it should not be a difficult matter to rig up the well head with lines leading away from the well to a point where pumps could be attached if needed and in this way be prepared to fight fires effectively and put them out quickly.

Such fires not only result in loss of life and a considerable quantity of oil and gas but by running wide open for a considerable period cause damage to other close-by properties by drawing in water. The only immediate relief against such a condition is to flow offset wells wide open while the fire is burning, but this is hazardous in itself and while effective in recovering oil for the offset owners it would be better if effective fire fighting methods were devised and their use made compulsory. Better still rig up the well head so that fire hazards are reduced to a minimum and the wells can be brought in safely and always under control.

All major companies and large independent operators have been prepared to handle their wells safely and the actual fires have been small in number compared with completions but unfortunately many lives have been lost in them and such a condition cannot continue long without serious handicap to the operators of the district.

Clean Leases Necessary

It is very necessary that leases be kept clean after they are on production and this work is now well organized over most of the field. Underbrush and woods with large areas covered with grass and weeds present fire hazards but properly controlled and cleaned this hazard can be reduced materially and the article by H. N. Blakeslee in this issue of The Oil and Gas Journal covers many of these points fully and is well worth reading and the advice should be followed.

There is one fire reported at a tank battery that was caused by a tank setter going on top of a tank full of oil and gas and cutting a hole in the deck for a flange. A spark was struck and the tank exploded and killed him and endangered the lives of others as well as considerable property in the vicinity of the fire. This practice is uncalled for and past experience in other fields has taught experienced men not to attempt to work around tanks when filled with such explosive mixtures. This gas is very rich and when mixed with air will make an explosive combination that is highly dangerous and must be respected if other fires are to be avoided.

Thunder showers accompanied by lightning are common to the area and, just before such storms with a low barometric pressure, gas will accumulate in low places and may be ignited and for this reason it is most desirable that all tanks be equipped with gas-tight fixtures and if the gas must be released to atmosphere it should be carried high into the air by properly designed stacks with check valves that can be closed from the ground if the vapor at the upper end of the stack should catch on fire.

The field will present a good field for use of fire prevention and fire fighting equipment of all kinds and careful study by manufacturers of this type of apparatus will be justified and should result in their securing a nice volume of future business.

Tank Bottom Replacement Costs Reduced ½ to ⅔

"NATASCO"

Plastic Tank Bottom Cement for Crude Oil Tank Bottoms

Seals Leaky Bottoms Tight

Prolongs Life of Old Bottoms Indefinitely

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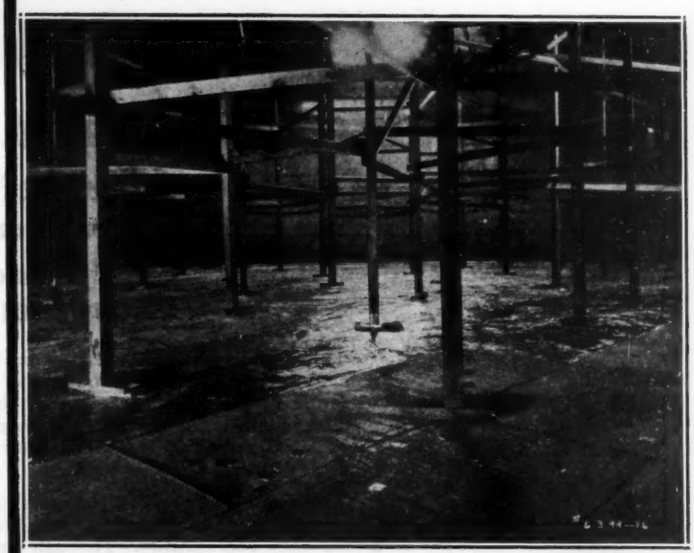

Natasco plastic bottom cement partly covering 55,000-bbl. steel storage tank bottom. Note patches in foreground covering holes caused by corrosion.

Note: No overlayer of water is necessary as "Natasco" Bottom Cement is not affected by direct contact with the oil and consequently conserves valuable storage space.

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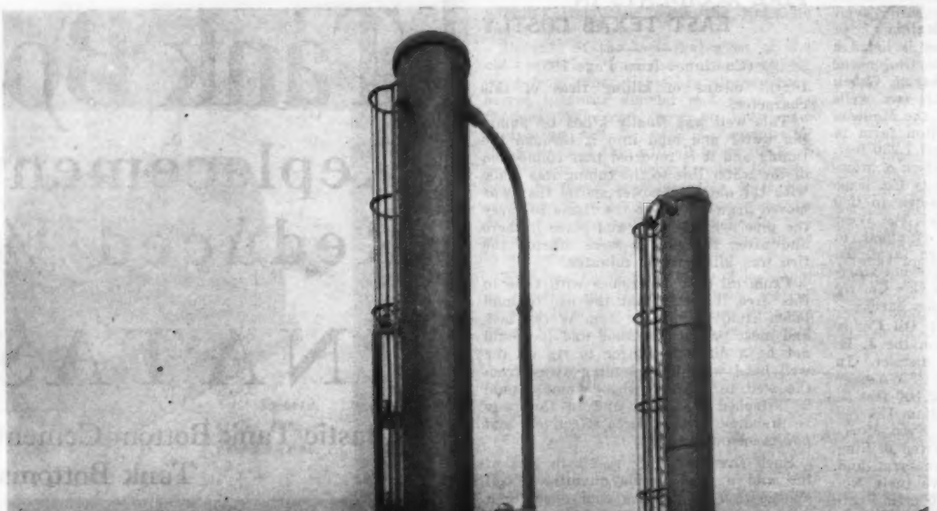

Debutanizer and Stabilizer Plant

White Star Refining Company

TRENTON, MICH.

DIVISION OF

VACUUM OIL COMPANY

This compact, double rectifier unit includes a debutanizer and a stabilizer to produce bottom products of varying vapor pressures so that a variation in the vapor pressure of the final blend may be easily accomplished to meet the industry's demands. Besides being flexible in giving the desired products, the installation is also designed for maximum simplicity of control and operation.

The valves for ordinary operation are located at ground level. For cleaning and inspection heat exchange equipment, a platform is provided, giving easy accessibility. Through the use of automatic controls, manual operation is reduced to a minimum.

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FOSTER WHEELER

Brief Items for Petroleum Refiners

M. G. PAULUS APPOINTED MANAGER OF REFINERIES

CHICAGO, Aug. 10.—Dr. Max G. Paulus, formerly assistant general manager of the manufacturing department of Standard Oil Co., of Indiana, has been promoted to the position of general manager of all the manufacturing activities of the company and subsidiaries, succeeding Dr. Gentry Cash, who died July 4. Other promotions announced are Harry F. Glair, formerly manager of the company's Whiting refinery has been made assistant general manager of manufacturing; also at the Whiting Refinery, O. E. Bransky, formerly general superintendent, and E. J. Shaeffer, have been advanced to the positions of manager and general superintendent, respectively.

Dr. Paulus is a graduate of Johns Hopkins university and became associated with the research laboratory of the Indiana company in 1915 at Whiting. From 1921 to 1927 he was assistant superintendent of the Casper, Wyo., refinery, and later became manager of the Rocky Mountain division.

Mr. Glair is a graduate of the University of Illinois and entered the Indiana company' employe in 1912 in the drafting department. In 1929 he became general manager at Whiting.

Dr. Bransky came to the Indiana company after receiving his doctor's degree at Johns Hopkins university in 1910. He became head of the paraffin department after four years in the medicinal white oils department and was later promoted to assistant superintendent and general superintendent within a short time.

Dr. Shaeffer is a gradute of Brown University and received his doctor's degree at Johns Hopkins University in 1913. At the latter university he was Carnegie research fellow until 1915 when he came to the Indiana company at the Whiting refinery laboratories where he rose to the position of assistant general superintendent.

BUILD MORE SKIMMING PLANTS IN EAST TEXAS

With two additional plants announced the past week refinery construction work continues to expand in East Texas fields. W. B. Mackey and associates have started construction on a 500-bbl. skimming plant just east of Gladewater on the T. & P. Railroad. The name of the company which has been organized to operate the plant is the Indian State Oil Co., and has general offices in the Allen Building at Dallas.

George Ames, head of the Gladewater Refining Co., is constructing a 500-bbl. skimming plant adjacent to the above refinery. Mr. Ames is associated with the Cherokee Chief Oil Co.

The Blue Ribbon Refining Co., organized by A. C. Hill of Dallas, who is president, and R. H. Orkin, is building a 1,000-bbl. refinery just off the Henderson Highway in the southern part of Kilgore. Ground was broken for the plant last week.

The Constantin Refining Co., headed by E. Constantin, Jr., and Jules Constantin of Oklahoma, will put its 3,000-bbl. refinery east of Overton on the I.& G.N. Railroad, in operation about August 15. It is also constructing a 10-car loading rack at this site.

Danciger Oil & Refining Co. and the Bell Oil & Gas Co., which are building a 10,000-bbl. refinery south of Longview on the I.&G.N. Railroad, are also erecting a 50-car loading rack adjacent to the plant. Construction work at this plant has started. An operating and sales office building has been completed. The plant will be in operation about October 15.

CONSTRUCTION WORK UNDER WAY AT TEXAS GULF COAST REFINERY

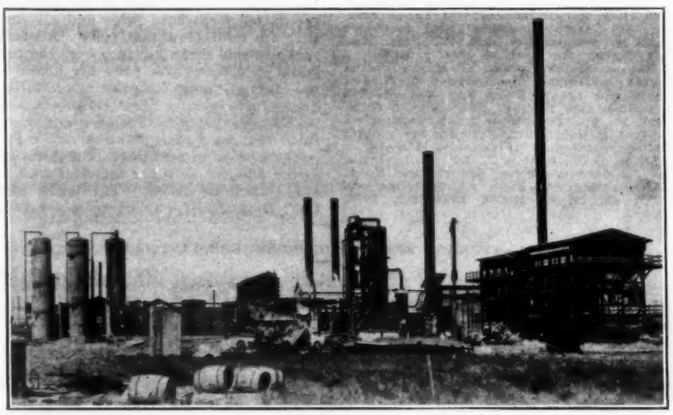
HOUSTON, Tex., Aug. 8.—The Gulf Coast's newest refinery is that of the Republic Oil Refining Co. at Texas City. The plant still is under construction although its topping unit has just recently been put in operation. Completion of the remainder of the plant, including a cracking unit, treating facilities and additional auxiliary equipment is expected within the next month.

The refinery under construction is shown in the accompanying picture. In the center background is the new topping plant, which is in operation. It is of Struthers-Wells design although some ideas of D. W. Hovey, vice president and general manager of the Republic Oil Refining Co., were incorporated in the equipment. At the right is the Winkler-Koch cracking unit under construction and at the left the incomplete treating plant. Work on the Winkler-Koch towers is just beginning.

Col. R. B. Dunbar of the National Supply Co., which has the contract for the construction, is the engineer in charge of the work while L. M. McKinney is superintendent.

The plant is being operated on a mixture of Big Lake, Reagan County and East Texas crude. An 8-inch line is being laid to the plant by the Texas Pipe Line Co. from Houston, where it ties into that company's main arteries from North and East Texas as well as from West Texas. The Texas Pipe Line Co. will serve as the carrier for the Republic Oil Refining Co.'s Big Lake oil, as well as that from East Texas. To tap the Big Lake Field, the Texas Pipe Line Co. also is laying a 6-inch line from its Iraan Station to Reagan County.

The new plant will have a crude capacity of 5,000 bbls. daily but through a working arrangement with Stone Oil Co., whose plant immediately adjoins that of the Republic Oil Refining Co., the latter company has a refining capacity of between 8,000 and 9,000 bbls. daily. The Stone plant is being operated by the Stone Oil Co. but is being worked in conjunction with that of the Republic whereby the latter supplies the crude and furnishes a market outlet for the greater part of the production. H. M. Stone is superintendent of the Stone Oil Co. plant, which is leased from the Atlantic Refining Co.



General view of Texas City, Tex., refinery of the Republic Oil Refining Co.

REQUIRE ALCOHOL BLEND

The Brazilian government has issued an order to the effect that 50 per cent of the alcohol production must be denatured with gasoline for use as motor fuel. A law requires that gasoline be blended with 5 per cent alcohol. It has been predicted that this law would be modified or suspended due to the fact that Brazil has not had enough alcohol of the proper specifications to satisfy the blending demand.

It is feared that the new ruling of 50 per cent of the alcohol production be made available will not provide sufficient blending material. It is believed that both alcohol and gasoline prices will advance as a result of the ruling.

MID-CONTINENT CHANGES

L. V. Surtees, who has been manager of the northern marketing division of the Mid-Continent Petroleum Corp. with headquarters in Waterloo, Iowa, has been transferred to St. Louis where he will be manager of the eastern division. He succeeds R. E. King who resigned to enter the jobbing business. Mr. Surtees has been succeeded by H. C. Wurster.

SUBSIDIZE RUMANIAN REFINERS

NEW YORK, Aug. 10.—The Rumanian Parliament has passed a law designed to aid the oil industry in that country by creating additional taxes on all petroleum products sold for consumption within Rumania. While details of the new law are lacking, the scheme provides for the collection of the new taxes by the refineries, who pay the sums so derived to the Government, which in turn distributes the proceeds among Rumanian refineries.

For the purpose of participating in this virtual subsidy, Rumania refiners have been divided into three classes, as follows: (1) small producers with production of 100 tons per day and under; (2) producers with output up to 1,000 tons daily; and (3) producers of amounts ranging from 1,000 to 1,500 tons per day.

Producers in each category will receive varying amounts from the proceeds of the new taxes, the smaller producers receiving a greater amount of financial assistance in this manner. Producers with output in excess of 1,500 tons daily will not share in the disbursements.

L. C. McCLOSKEY HEADS IMPERIAL REFINERIES

CHATHAM, Ontario, Aug. 8.—A number of important changes have been announced in the personnel of Imperial Oil, Ltd., and its refining subsidiaries.

Charles B. Leaver, for the past nine years superintendent of the Imperial Oil, Ltd. refinery at Sarnia, Ontario, has been appointed general manager of Imperial Oil Refineries, Ltd. He will not for the time being remove to Toronto. He succeeds Leo C. McCloskey.

Mr. McCloskey succeeds the late Charles R. Ewing as president of Imperial Oil Refineries, Ltd. Mr. McCloskey was some months ago named a director of Imperial Oil, Ltd. and is in charge of manufacturing and purchasing.

George L. Stewart, formerly assistant superintendent of the Regina, Saskatchewan refinery and since 1923 assistant superintendent of the Sarnia plant, has succeeded Mr. Leaver as superintendent at Sarnia.

L. R. BRAMMER APPOINTED GENERAL SALESMANAGER

L. R. Brammer, who has been connected with Mid-Continent refining and jobbing organizations for several years, has been appointed general sales manager of the East Texas Refining Co. and Burford Oil Co. with headquarters in the Tower Petroleum Building, Dallas, Tex. The appointment of Mr. Brammer follows the consolidation of the sales and marketing departments of the East Texas and Burford companies, of which F. W. Burford is president and general manager.

Mr. Brammer was connected with the Waite Phillips Co. in Tulsa for several years and at the time of its consolidation with the Barnsdall companies was tank car sales manager. He was engaged in the jobbing business at Okmulgee, Okla., for a time and later joined the Reserve Petroleum Corp. of Tulsa, handling refinery and natural gasoline plant sales. He was in charge of sales of the Gilliland Oil Co. of New Mexico, a subsidiary of the Reserve, until the recent sale of the Albuquerque refinery to the Continental Oil Co.

O. W. Crick, who was connected with credit and sales departments of Mid-Continent refining and natural gasoline companies for several years, has been appointed credit manager of the East Texas and Burford companies, effective August 1. He has been employed in the sales department of the Barnsdall Refining Co., Tulsa, and previously was credit manager of the Independent Oil & Gas Co. previous to its merger with the Phillips Petroleum Co.

R. E. Bishop will continue as sales manager of the East Texas and Burford companies. The former company has two new refineries in the East Texas fields with a capacity of 18,000 bbls. daily and the Burford company for several years has operated a 6,000-bbl. plant at Pecos, Tex.

GOSHEN PLANT OPERATING

The Goshen Oil Refining Co. is operating a local refinery at Torrington, Wyo. The plant, which has a capacity of 300 bbls. daily, operates with Osage, Wyo., and Lance Creek crude oil. The former is shipped to the refinery in tank car and the latter by truck. The management is considering the construction of a small cracking unit.

The products of the plant which are distributed locally are principally tractor fuels and furnace oils. M. E. Eaton is president and general manager of the company. E. D. Bishop is refinery superintendent.

Manufacture of Natural Gasoline

Shut Down Order Decreases Output 500,000 Gallons

Due to the shutdown of wells by order of Governor Murray there has been a reduction in the natural gasoline production of the State of approximately 500,000 gallons daily, according to a check of operations completed the first of the week. This is 40 per cent of the State's production which has been averaging about 1,250,000 gallons daily.

Some of the manufacturers said that they expected their production to increase this week while others were anticipating additional declines when the shutdown order becomes more generally effective. The shutdown applies to over 3,000 of the State's more than 60,000 wells. Practically all of the shutdown wells are located in the Oklahoma City and Greater Seminole areas where approximately 60 per cent of the State's natural gasoline is obtained. The bulk of the production in the remainder of the State comes from the stripper wells of the older fields and these wells have not been shut in. The production of the plants in these areas has not decreased. In fact some increase is expected due to the fact that some of the producing companies are attempting to increase their output of crude oil which will mean a corresponding gain in the quantity of casinghead available to the plants.

The Oklahoma City and Seminole Fields have been furnishing more than 50 per cent of the State's natural gasoline output all year. They are the two areas in which new wells are being drilled with considerable flush production. The shutdown in the Oklahoma City plants has been better than 90 per cent. The only wells which have been allowed to produce are the gas wells furnishing gas for pipe line distributing companies.

The natural gasoline output from this gas is only a few thousand gallons daily. The entire field previous to the shutdown was producing approximately 200,000 gallons daily. The Indian Territory Illuminating Oil Co., which is the largest manufacturer in the field, has all of its four plants shut down. The two plants in which it is interested with the Cromwell-Franklin interests are also shut down. The I. T. I. O. furnishes gas to affiliated gas interests but no attempt is being made to extract the natural gasoline from the gas, the well pressure being used to deliver the gas to lines. The plants in which this company is interested have been producing from 80,000 to 100,000 gallons of natural gasoline daily.

The two plants of the Phillips Petroleum Co. are making a little gasoline from gas wells but most of the operations are shut down. The previous production was around 70,000 gallons daily. Other plants in the field which are either completely shut down or are making a small fraction of their normal output belong to the Shell Petroleum Corp., Wirt Franklin, Sinclair Oil & Gas Co. and the Coline Gasoline Co. The plant of the Amerada Petroleum Corp., which processes gas sold to industries in the Oklahoma City area, is being allowed to operate and is producing 5,000 gallons of natural gasoline daily.

Seminole Situation

A check of representative manufacturers in the Greater Seminole area showed variation in the plant production. The production of the Skelly Oil

(Continued on Page 130)

MOVE OFFICES

The Natural Gasoline Association of America has moved its headquarters from the Tulsa building to 819 Wright building, Tulsa.

MOTOR FUEL DATA SHOW TREND TOWARD HIGH VAPOR PRESSURE

By E. C. Lane, E. L. Garton and A. J. Kraemer
Bureau of Mines

This paper deals specifically with data relative to gravity, Reid vapor pressure[1], and distillation (Method 100.13)[2]. The samples tested were divided into "competitive price gasolines" and "premium price motor fuels," a method of presentation that was begun with the twenty-second semiannual survey[3]. A total of 312 samples were collected from service station pumps in 20 cities throughout the United States. Of this number of samples, 207 were "competitive price gasolines" and 105 were "premium price motor fuels." All of the samples were collected in March, 1931, and analyzed at the Petroleum Experiment Station of the United States Bureau of Mines at Bartlesville, Okla.

"Competitive price gasoline" includes those fuels that are sold at the generally recognized local base price and all fuels that are sold below that price. All fuels that are sold at an advance over the generally recognized base price are placed in the class of "premium price motor fuels." These fuels include Ethyl Gasolines, benzol blends, "high-test" fuels, and those fuels that owe their "antiknock" rating to the process of manufacture rather than to the addition of other material such as Ethyl fluid or benzol. The term "high test" is generally applied to motor fuels that are more volatile than the regular competitive price gasolines. "High-test" fuels may also have a high antiknock rating.

The results of the 23 semiannual surveys of the bureau are summarized in Tables 1 and 2; the "winter" surveys are given in Table 1 and the "summer" surveys in Table 2. Table 3 presents the average results of the winter survey, March, 1931.

[1] American Society for Testing Materials, Tentative Method of Test for Vapor Pressure of Natural Gasoline (Reid method): A.S.T.M. designation D323-30T, Proc. Am. Soc. Testing Mat., vol. 30, 1930, p. 1,139.

[2] United States Bureau of Mines, United States Government Specification for Lubricants and Liquid Fuels and Methods for Sampling and Testing: Tech. Paper 323B, 1927, 121 pp. Obtainable from the superintendent of documents, Government Printing Office, Washington, D. C., price 15 cents.

[3] Lane, E. C., Garton, E. L., and Kraemer, A. J., Twenty-second Semiannual Motor Gasoline Survey: Rept. of Investigations 3,063, Bureau of Mines, December, 1930, 19 pp.

Collecting Samples

The samples collected during this survey were taken, as in the past, directly from the hose at the gasoline pump at the service station. The use of a funnel in transferring the gasoline from the hose to the sample can was avoided wherever possible. All of the samples were collected by chemists or engineers of the bureau who were familiar with the requirements for sampling. One-gallon screw-capped tin cans were used. After a can had been filled to within 1 inch of the top, the cap (which was provided with a composition gasket covered with tin foil) was screwed on and tightened by means of pliers. The use of a soldering iron to seal the tops was not considered advisable. Samples from Denver, El Paso, Salt Lake City, Seattle, Los Angeles and San Francisco were packed, four to a stout wooden box, and shipped by freight to the Petroleum Experiment Station of the United States Bureau of Mines at Bartlesville, Okla., where the samples were analyzed. The samples from the other cities in the survey were collected by O. C. Blade, junior chemist of the bureau. As the samples in each city were collected, they were packed, four to a box, and shipped to Bartlesville by freight. All of the samples upon being received at Bartlesville were stored in a cool place until needed for analysis.

Gravity

The specific gravity of each sample was determined by means of a Westphal balance. Test tube samples immersed in a constant temperature water bath at 60° F. were used in these determinations. The conversion from specific gravity to degrees A.P.I. was made by the use of National Standard Petroleum Oil Tables.

Gravity in itself has no particular significance with respect to the quality of a motor fuel. However, when considered in connection with other properties, gravity gives some information regarding the composition of the motor fuel, and for this reason gravity determinations are included in the semiannual surveys.

Vapor Pressure

The difference in vapor pressures between summer grade and winter grade of motor fuel is found by comparing the Reid vapor pressure of the samples obtained in this survey with those obtained in the twenty-second survey of samples collected in August, 1930. Precautions, as previously mentioned, were taken in obtaining the samples from the service

(Continued on Page 130)

TABLE 1—AVERAGE RESULTS OF MOTOR GASOLINE SURVEYS
Winter

Survey—	Specific gravity	°A.P.I.	First drop	10%	20%	50%	90%	End-point	Average b.p.	% recovered
Jan., 1920	0.748	57.7	119	173	200	259	369	427	264	96.6
Jan., 1921	.744	58.7	113	168	197	261	377	431	264	95.9
Jan., 1922	.745	58.4	102	168	200	267	377	430	268	96.0
Jan., 1923	.744	58.8	107	167	201	267	375	427	268	96.0
Jan., 1924	.744	57.7	96	164	196	267	383	431	268	96.2
Jan., 1925	.746	58.2	95	161	195	266	382	425	267	96.2
Jan., 1926	.747	57.9	93	155	189	264	380	423	264	96.3
Jan., 1927	.748	57.7	92	149	185	264	383	421	264	96.5
Jan., 1928	.747	57.9	90	146	181	261	378	416	260	96.5
Jan., 1929	.746	58.2	87	143	179	263	380	414	260	96.1
Jan., 1930	.741	59.5	93	139	174	256	371	406	264	96.6
Mar., 1931	.740	59.7	91	139	172	254	366	401	252	96.6
Average	0.745	58.4	98	156	189	262	377	421	263	96.3

TABLE 2—AVERAGE RESULTS OF MOTOR DRIVEN SURVEYS
Summer

Survey—	Specific gravity	°A.P.I.	First drop	10%	20%	50%	90%	End-point	Average b.p.	% recovered
July, 1920	0.749	57.4	130	182	208	268	388	446	277	96.7
July, 1921	.747	57.9	125	177	202	262	377	433	270	96.7
July, 1922	.753	56.8	121	176	208	270	376	429	273	96.8
July, 1923	.751	56.9	125	179	206	269	382	436	273	96.8
July, 1924	.751	56.9	107	167	200	271	390	431	273	96.0
July, 1925	.754	56.2	108	169	204	275	387	427	275	96.2
July, 1926	.750	57.2	100	162	194	266	382	421	267	96.7
July, 1927	.748	57.7	102	159	193	267	381	417	267	96.4
July, 1928	.748	57.7	100	156	190	265	380	413	265	96.1
July, 1929	.748	57.7	102	155	187	263	378	410	264	96.1
Aug., 1930	.746	58.2	99	149	182	260	366	403	257	97.3
Average	0.749	57.4	111	166	198	267	381	424	269	96.5

TABLE 3—AVERAGE RESULTS OF MOTOR GASOLINE SURVEY, MARCH, 1931
Competitive Price Gasoline

City—	Spec. grav.	°A.P.I.	Vapor press.	First 10% drop	evap.	10%	20%	50%	90%	End-point	Aver. b.p.	% recov.
Boston	0.744	58.7	9.1	88	132	139	175	257	362	398	252	96.9
New York	.741	59.5	9.7	94	137	144	174	256	365	401	254	97.0
Washington	.745	58.4	8.9	89	130	138	176	263	364	397	264	96.9
Pittsburgh	.747	57.9	9.5	98	134	141	174	258	368	402	255	96.8
Atlanta	.744	58.7	8.1	90	134	139	174	265	371	407	257	97.1
Cleveland	.738	60.2	10.3	90	127	138	172	258	371	400	254	96.0
Chicago	.737	60.5	10.0	88	122	132	169	262	381	413	258	96.1
New Orleans	.745	58.4	8.9	99	131	138	173	265	368	400	256	96.9
St. Louis	.736	60.8	9.1	94	132	138	169	254	376	409	254	96.9
Minneapolis	.733	61.5	9.7	91	126	131	163	249	374	407	250	96.8
Omaha	.733	61.5	9.0	93	133	139	171	252	370	407	252	97.0
Tulsa	.734	61.3	9.4	90	133	141	170	250	366	406	251	96.6
Dallas	.741	59.5	8.2	90	139	146	179	260	369	407	258	97.2
Denver	.738	60.2	8.6	82	122	128	158	242	366	400	245	97.1
El Paso	.744	58.7	7.9	90	134	142	178	256	353	384	250	97.2
Salt Lake City	.747	57.9	9.4	82	123	134	171	259	369	398	253	96.4
Seattle	.745	58.4	8.3	92	128	139	177	262	371	409	259	96.8
Los Angeles	.750	57.2	8.4	93	135	143	181	264	381	413	262	96.8
San Francisco	.750	57.2	9.1	90	127	138	176	262	382	413	259	96.2
Average	0.738	60.2	9.1	99	130	138	173	258	371	404	255	96.2

Premium Price Motor Fuels

Boston	0.741	59.5	9.1	92	135	142	175	252	354	389	248	97.0
New York	.741	59.5	9.0	92	137	143	169	251	362	402	250	97.4
Washington	.757	55.4	8.7	92	132	138	167	240	357	396	244	97.3
Pittsburgh	.744	58.7	8.6	95	134	139	169	243	357	399	246	97.2
Atlanta	.741	59.5	7.9	90	138	144	175	250	349	389	247	97.5
Cleveland	.742	59.2	8.8	96	141	147	173	229	341	386	235	97.1
Chicago	.735	61.0	10.2	88	122	129	161	243	361	395	243	96.1
New Orleans	.744	58.7	7.4	97	143	148	180	260	358	395	255	97.5
St. Louis	.733	61.5	9.2	95	130	135	167	247	364	402	248	96.9
Minneapolis	.733	61.5	8.7	92	130	134	161	234	356	405	240	97.4
Omaha	.729	62.6	10.2	93	124	130	156	239	362	395	243	96.9
Tulsa	.729	62.6	9.9	89	128	132	157	233	359	399	240	96.8
Dallas	.743	58.9	8.0	92	136	141	172	249	364	403	250	97.3
Denver					No premium price motor fuels sampled in Denver							
El Paso	.743	58.9	6.1	88	140	147	178	244	324	385	240	97.8
Salt Lake City	.759	54.9	6.9	91	137	143	172	243	356	388	245	97.5
Seattle	.748	57.7	7.6	96	136	143	176	251	354	397	249	97.3
Los Angeles	.750	57.2	8.1	93	133	139	173	250	351	389	246	97.1
San Francisco	.752	56.7	8.1	94	133	139	172	249	351	395	248	97.1
Average	0.743	58.9	8.5	92	133	139	170	245	355	395	245	97.1

START WORK ON FIRST PLANTS IN EAST TEXAS

HOUSTON, Tex., Aug. 11.—Humble Oil & Refining Co. has started construction of two natural gasoline plants in East Texas, the first to be built anywhere in that field. Both plants will be of the absorption type.

One plant, which will be at London, Rusk County, will have a capacity of 10,000,000 feet daily while the other, located on the company's Peterson lease at Kilgore, will have a capacity of 5,000,000 feet daily. Both plants are to be rushed to completion.

PIPING ENGINEERS

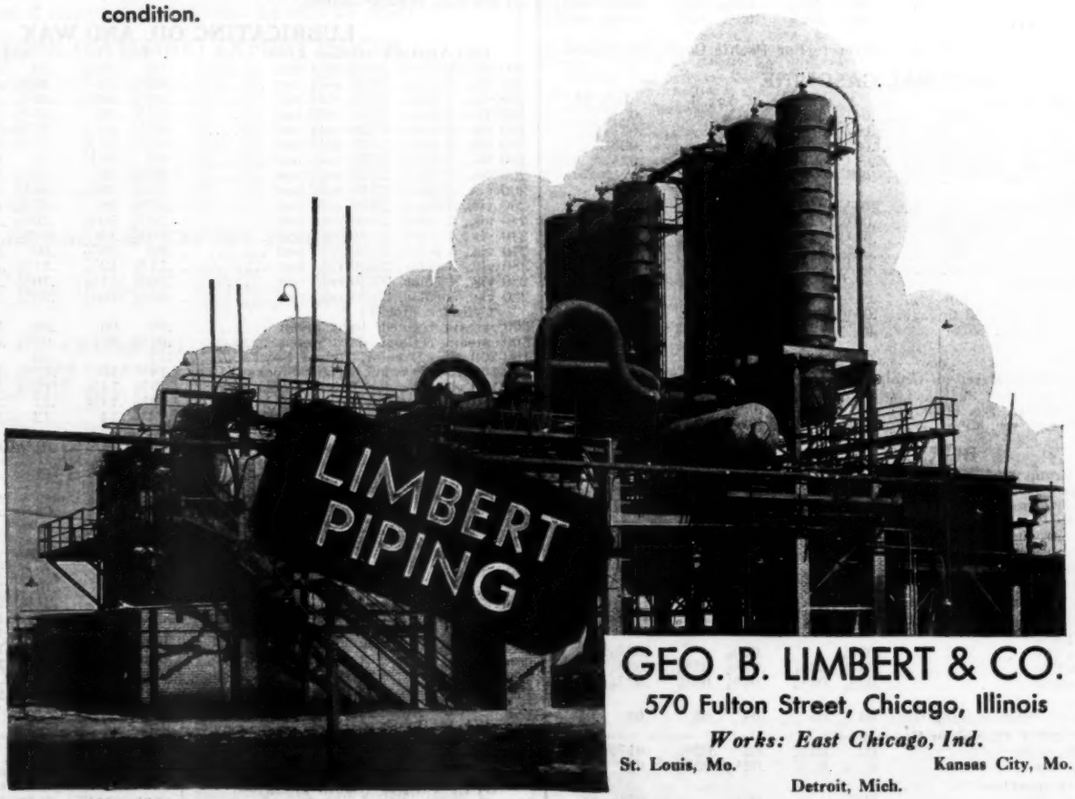
That Know How

Modern high pressure, high temperature piping demands skill, experience, and the best of manufacturing facilities.

These things Limbert has. Thirty years of specialized experience on difficult piping of all kinds with installations all over the world . . . A proven engineering staff capable of design and versed in the problems of installation as well as the problems of manufacture . . . A big plant with every modern facility for fittings, joints, and fabricated pipe from the simplest job to the most complicated power plant or refinery installation.

Use Limbert to manufacture ordinary requirements or to design and manufacture special piping for every power plant or refinery condition.

A typical cracking still piping installation furnished complete by Limbert



GEO. B. LIMBERT & CO.

570 Fulton Street, Chicago, Illinois

Works: East Chicago, Ind.

St. Louis, Mo. Kansas City, Mo.

Detroit, Mich.

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

GASOLINE AND NAPTHA

	Aug. 11		Aug. 4		July 28	
OKLAHOMA (Group 3)—						
50-52 450 endpoint	.03½	.03¾	.02⅞	.03¼	.02⅞	.03¼
56-58 450 endpoint	.03½	.03¾	.03		.02⅞	.03
58-60 437 endpoint (U. S. Motor)	.03¾	.04	.03⅛	.03⅜	.03	.03¼
60-62 437 endpoint	.03⅞	.04	.03⅛	.03⅜	.03	.03⅜
60-62 400 endpoint	.04	.04¼	.03¼		.03⅛	.03⅜
64-66 375 endpoint	.04¼	.04½	.03¼	.03½	.03¼	.03½
68-70 360 endpoint	.04⅜	.04⅝	.03⅜	.03½	.03⅜	.03½
64-66 437 endpoint (blend)	.03½	.03¾	.02⅞	.03	.02⅞	.03
NORTH TEXAS—						
50-52 450 endpoint	.03¼	.03½	.02¾	.03	.02¾	.03
58-60 450 endpoint	.03½		.02⅞	.03	.02⅞	.03
58-60 437 endpoint (U. S. Motor)	.03¾	.04	.03⅛	.03¼	.03	.03⅛
60-62 400 endpoint	.04	.04¼	.03⅛	.03¼	.03⅛	.03¼
64-66 390 endpoint	.04⅛	.04¼	.03¼	.03½	.03¼	.03¼
64-66 375 endpoint	.04¼	.04½	.03¼	.03½	.03¼	.03½
68-70 360 endpoint	.04⅜	.04½	.03⅜	.03½	.03⅜	.03½
64-66 437 endpoint (blend)	.03½		.02⅞	.03	.02⅞	.03
***NORTH LOUISIANA—**						
58-60 437 endpoint (U. S. Motor)	.04	.04¼	.03⅜	.03½	.03⅜	.03½
***ARKANSAS—**						
58-60 437 endpoint (U. S. Motor)	.04	.04¼	.03¼	.03⅜	.03¼	.03⅜
PENNSYLVANIA—						
52-54 Naphtha	.04½	.04¾	.04½		.04½	
54-56 Naphtha	.04½	.04¾	.04½		.04⅜	.04½
58-60 Gasoline	.05	.05¼	.04¾		.04⅜	.04½
60 Gasoline	.05¼	.05½	.04¾	.05	.04½	
62 Gasoline	.05¼		.05¼		.05	
64 Gasoline	.05½		.05¼	.05½	.05¼	
68-70 350 endpoint gasoline	.05¾		.05½		.05¼	
CALIFORNIA—						
†54-58 437 endpoint (U. S. Motor) domestic	.05	.06½	.04¾	.06	.04¼	.05½
58-60 400 endpoint domestic gasoline	.05¼	.06½	.05	.06¼	.04½	.05½
CHICAGO DISTRICT (Based on Group 3)—						
50-52 450 endpoint (Naphtha)	.03½	.03½	.02¾	.03	.02¾	.03
58-60 437 endpoint (U. S. Motor)	.03⅝	.04	.03⅛	.03⅜	.03	.03⅛
60-62 400 endpoint	.03⅞	.04¼	.03¼	.03½	.03⅛	.03¼
64-66 375 endpoint	.04⅛	.04¼	.03⅜	.03⅝	.03¼	.03⅜
68-70 360 endpoint	.04¼	.04½	.03½	.03¾	.03½	.03¾
64-66 437 endpoint (blend)	.03¼		.02¾	.03	.02¾	.03
GULF COAST (Export)—						
58-60 U. S. Motor	.03¼	.03½	.03¼	.03½	.03¼	.03½
60-62 400 endpoint	.03½	.03⅝	.03¼	.03⅝	.03½	.03⅝
61-63 390 endpoint	.03⅝	.03¾	.03⅝	.03¾	.03⅝	.03¾
64-66 375 endpoint	.03⅝	.03¾	.03⅝	.03¾	.03⅝	.03¾

*Louisiana, Arkansas and Mississippi delivery. †For Pacific Coast consumption.

NATURAL GASOLINE

	Aug. 11		Aug. 4		July 28	
OKLAHOMA (Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.04½	.05	.03¼		.02¾	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.04½	.04¾	.03		.02½	
Grade B, 76-83.9, 375 e.p., rec. 85%	.04½		.02⅞		.02⅜	
Grade BB, 84-92, 375 e.p., rec. 85%	.04½		.02⅞		.02¼	
Grade C, 80-92, 375 e.p., rec. 78%	.04½		.02⅞		.02¼	
NORTH TEXAS—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.04¼	.04½	.03		.02⅝	
Grade AA, 80-87.9, 375 e.p., rec. 90%	.04¼		.02¾		.02¼	
Grade B, 76-83.9, 375 e.p., rec. 85%	.04¼		.02⅝		.02⅛	
Grade BB, 84-92, 375 e.p., rec. 85%	.04¼		.02⅝		.02⅛	
Grade C, 80-92, 375 e.p., rec. 78%	.04¼		.02⅝		.02⅛	
NORTH LOUISIANA—						
Grade AA, 80-87, 375 e.p., rec. 90%	.04½		.03		.02½	
Grade BB, 84-92, 375 e.p., rec. 85%	.04½		.02⅞		.02¼	
Grade C, 80-92, 375 e.p., rec. 78%	.04½		.02⅞		.02¼	
CALIFORNIA—						
73-78 375-390 endpoint	.04	.05	.03¾	.05	.03¼	.04¼
CHICAGO DISTRICT (Based on Group 3)—						
Grade A, 72-79.9, 375 e.p., rec. 90%	.04½		.03⅛		.02⅝	.02¾
Grade AA, 80-87.9, 375 e.p., rec. 90%	.04½		.03		.02⅜	.02½
Grade BB, 84-92, 375 e.p., rec. 85%	.04½		.02⅞		.02¼	

BURNING OIL

	Aug. 11		Aug. 4		July 28	
OKLAHOMA (Group 3)—						
41-43 water white kerosene	.01⅞	.02⅛	.01¾	.02	.01¾	.02
42-44 water white kerosene	.02⅛	.02¼	.02	.02¼	.02	.02¼
NORTH TEXAS						
41-43 water white kerosene	.01¾	.01⅞	.01⅝	.01⅞	.01¾	.01⅞
40-41 water white kerosene	.01¾		.01⅝	.01¾	.01⅝	.01¾
***NORTH LOUISIANA—**						
41-43 water white kerosene	.02¼		.02	.02¼	.02	.02¼
***ARKANSAS—**						
41-43 water white kerosene	.02¼		.02¼		.02¼	
PENNSYLVANIA—						
43 Kerosene prime white	.03⅝		.03⅝		.03⅝	
45 Kerosene water white	.03½	.03¾	.03½	.03⅝	.03⅝	.03¾
46 Kerosene water white	.03¾	.03⅞	.03¾	.03⅞	.03⅞	.04
CALIFORNIA—						
38-40 water white Kero. (high burning test)	.04	.05	.04	.05	.04	.05½
CHICAGO DISTRICT (Based on Group 3)—						
41-43 water white kerosene	.02	.02⅛	.02	.02⅛	.01⅞	.02⅛
42-44 water white kerosene	.02⅛	.02¼	.02⅛	.02¼	.02	.02¼
GULF COAST (Export)—						
41-43 prime white	.03½		.03½		.03½	
44 prime white	.03½	.03¾	.03½	.03¾	.03½	.03¾

*Louisiana, Arkansas, Mississippi and East Texas delivery.

FUEL OIL

	Aug. 11		Aug. 4		July 28	
OKLAHOMA (Group 3)—						
Below 18 gravity Fuel Oil, per bbl.	.20	.30	.20	.30	.20	.30
18-22 Fuel Oil, per bbl.	.25	.30	.25	.30	.25	.30
20-22 Fuel Oil, per bbl.	.25	.30	.25	.30	.25	.30
22-26 Fuel Oil, per bbl.	.25	.30	.25	.30	.25	.30
24-26 Fuel Oil, per bbl.	.30	.35	.30	.35	.30	.35
26-30 Fuel Oil, per bbl.	.35	.45	.35	.45	.35	.45
28-30 Fuel Oil, per bbl.	.35	.45	.35	.45	.35	.45
32-36 Gas Oil (industrial)	.00⅝	.00¾	.00⅝	.00¾	.00⅝	.00¾
32-36 Gas Oil (straw color, high cold test)	.00⅝	.00¾	.00⅝	.00¾	.00⅝	.00¾
32-36 Gas Oil (straw color, low cold test)	.01⅛	.01¼	.01⅛	.01¼	.01⅛	.01¼
36-38 Distillate	.01¼	.01⅜	.01¼	.01⅜	.01¼	.01⅜
38-40 Straw Distillate	.01¼	.01½	.01¼	.01⅜	.01¼	.01⅜
Note—Fuel oils over 40 cold test generally 5 to 10 cents per barrel less.						
NORTH TEXAS—						
Below 20 gravity Fuel Oil, per bbl.	.15	.25	.15	.25	.15	.25
24-26 Fuel Oil, per bbl.	.20	.30	.20	.30	.20	.30
32-36 Gas Oil (industrial)	.00⅝	.00¾	.00⅝	.00¾	.00⅝	.00¾
38-40 Straw Distillate	.01⅛	.01¼	.01⅛	.01¼	.01⅛	.01¼
***NORTH LOUISIANA—**						
18-20 Fuel Oil, per bbl.	.45	.55	.50	.60	.50	.60
30-32 Gas Oil (low cold test)	.01½	.01¾	.01⅝	.01¾	.01⅝	.01¾
***ARKANSAS—**						
33-36 Distillate	.01¾	.02	.01¾	.02	.01¾	.02
30-32 Gas Oil	.01½	.01¾	.01⅝	.01¾	.01⅝	.01¾
16-22 Refinery Fuel Oil, per bbl.	.45	.50	.50	.55	.50	.55
GULF COAST (South Texas)—						
Gas Oil	.02⅛	.02⅜	.02⅛	.02¾	.02⅛	.02¾
Bunker C Fuel (cargo lots), per bbl.	.45	.50	.55	.60	.55	.60
Bunker C Fuel (small lots)	.60		.65		.65	
PENNSYLVANIA—						
30-34 Fuel Oil	.02½		.02½		.02¼	.02½
36-40 Fuel Oil	.02½		.02½		.02¼	.02½
CALIFORNIA—						
42-45 480 endpoint engine distillate	.04½	.06	.04½	.06	.04	.06
15-19 Fuel Oil, Bunker (at tidewater), bbl.	.60	.80	.60	.80	.60	.80
15-19 Fuel Oil (cargo lots, at tidewater), bbl.	.55	.75	.55	.75	.55	.75
†15-19 Fuel Oil, f.o.b. tank cars	.45	.75	.45	.75	.40	.75
27 plus Diesel, per bbl.	.70	.95	.70	.95	.70	.95
30-34 Gas Oil	.75	1.00	.75	1.00	.75	1.00
CHICAGO DISTRICT (Based on Group 3)—						
18-22 Fuel Oil, per bbl.	.20	.25	.17½	.25	.15	.25
22-26 Fuel Oil, per bbl.	.25	.30	.25	.30	.25	.30
28-30 Fuel Oil, per bbl. (zero)	.37½	.42½	.37½	.40	.35	.40
32-36 Gas Oil (industrial)	.00⅝	.00¾	.00⅝	.00⅞	.00⅝	.01
32-36 Gas Oil (zero)	.01	.01¼	.01	.01⅛	.01	.01⅛
38-40 Straw Distillate	.01⅛	.01⅜	.01⅛	.01⅜	.01	.01¼

*Louisiana, Arkansas, Mississippi and East Texas delivery. †Lowest priced fuel oil has high sulphur content.

LUBRICATING OIL AND WAX

	Aug. 11		Aug. 4		July 28	
OKLAHOMA (Group 3)—						
100 vis., 2 color, 20-25 cold test	.04	.04½	.04	.04½	.04	.04½
100 vis., 3 color, 20-25 cold test	.03¾	.04	.03¾	.04	.03¾	.04
150 vis., 3 color, 20-25 cold test	.06¼	.06¾	.06¼	.06¾	.06¼	.06¾
150 vis., 4 color, 20-25 cold test	.05¾	.06	.05¾	.06	.05¾	.06
180 vis., 3 color, 23-28 cold test	.07¾	.08¼	.07½	.08	.07½	.08
180 vis., 4 color, 23-28 cold test	.07¼	.07¾	.07¼	.07⅜	.07¼	.07⅜
180 vis., 5 color, 23-28 cold test	.07	.07¼	.07	.07¼	.07	.07¼
200 vis., 3 color, 23-28 cold test	.08½	.09	.08½	.09	.08½	.09
200 vis., 4 color, 23-28 cold test	.08¼	.08¾	.08¼	.08¾	.08¼	.08¾
200 vis., 5 color, 23-28 cold test	.07¾	.08	.07¾	.08	.07¾	.08
240 vis., 3 color, 25-30 cold test	.10½	.10¾	.10½	.10¾	.10½	.10¾
240 vis., 4 color, 25-30 cold test	.09½	.10	.09½	.10	.09½	.10
240 vis., 5 color, 25-30 cold test	.09	.09½	.09	.09½	.09	.09½
280 vis., 3 color, 25-30 cold test	.11¾	.12¼	.11¾	.12¼	.11¾	.12¼
280 vis., 4 color, 25-30 cold test	.10¾	.11¼	.10¾	.11¼	.10¾	.11¼
280 vis., 5 color, 25-30 cold test	.10¼	.10½	.10¼	.10½	.10¼	.10½
Cylinder Stocks:						
600, steam refined, light green	.04	.06	.04	.05½	.04	.05½
600, steam refined, dark green	.02½	.03	.02½	.03	.02½	.03
190-200 vis., D color, Bright Stocks	.17		.16		.16	
150-160 vis., D color, Bright Stocks 0-10 c.t.	.14	.15	.12½	.13	.12½	.13
150-160 vis., D color, Bright Stocks 10-25 c.t.	.13½	.14½	.12½	.12¾	.12½	.12¾
150-160 vis., D color, Bright Stocks 25-40 c.t.	.13½	.14¼	.12	.12¼	.11¾	.12¼
150-160 vis., E color, Bright Stocks	.13½	.14	.12	.12¼	.11½	.12
Waxes:						
124-126 White Crude Scale Wax	.01½	.01¾	.01½	.01¾	.01½	.01¾
All bright stock prices are for domestic movement.						
PENNSYLVANIA—						
34 Neutral	.05½		.05½		.05½	
34 Sundebloom	.05	.05½	.05½		.05	
36 Miners' Neutral	.05½		.05½		.05½	
150, 3 color	.15½		.15	.15½	.15	.15½
180, 3 color	.17½	.18	.16	.17½	.18	.18½
200, 3 color	.20		.19	.20	.20	.21
220, 3 color	.22	.26	.21½	.26½	.23	.26½
600, steam refined	.11	.11½	.10	.11	.08½	.09
650, steam refined	.12		.11½	.12½	.11	
600, Pennsylvania Flash	.12½		.12½	.13½	.11½	.12½
600, E filtered	.13	.14	.13	.14	.11	.12
600, D filtered, Oil City	.15½	.16½	.17		.16	
Pennsylvania Bright Stocks below 35 c.t.	.24	.25	.24	.25	.20	.21
Pennsylvania Bright Stocks above 35 c.t.	.24		.24		.19	.20
*122-124 White Crude Scale Wax	.019	.02	.02		.02	.02½
*124-126 White Crude Scale Wax	.019	.02	.02		.02⅛	.02¼
*At New York.						
GULF COAST (South Texas)—						
100 vis., 2-2½ color, pale oil	.05⅜	.05½	.05⅜	.05½	.05⅜	.05½
200 vis., 3 color, pale oil	.07⅜	.07½	.07⅜	.07⅝	.07⅜	.07⅝
300 vis., 3 color, pale oil	.08⅝	.08⅞	.08⅝	.08⅞	.08⅝	.08⅞
500 vis., 3½ color, pale oil	.09⅞	.10⅛	.09⅞	.10⅛	.09⅞	.10⅛
750 vis., 3½ color, pale oil	.11⅜	.11⅞	.11⅜	.11⅞	.11⅜	.11⅞
1,200 vis., 3½ color, pale oil	.13⅞	.14⅜	.13⅞	.14⅜	.13⅞	.14⅜
2,000 vis., 4 color, pale oil	.14⅞	.15⅜	.14⅞	.15⅜	.14⅞	.15⅜
200 vis., 5-6 color, red oil	.06⅝	.06⅞	.06⅝	.06⅞	.06⅝	.06⅞
300 vis., 5-6 color, red oil	.07⅞	.08⅜	.07⅞	.08⅜	.07⅞	.08⅜
500 vis., 5-6 color, red oil	.09⅜	.09⅝	.09⅜	.09⅝	.09⅜	.09⅝
1,200 vis., 5-6 color, red oil	.12⅞	.13⅜	.12⅞	.13⅜	.12⅞	.13⅜
2,000 vis., 6 plus color	.14⅞	.15⅜	.14⅞	.15⅜	.14⅞	.15⅜

REFINERY AND CRUDE PRICES

Quotations on refined products are for interstate or export movement unless otherwise noted.

CALIFORNIA—						
130 vis., 2½-3 color	.08	.08½	.08	.08½	.08	.08½
200 vis., 2½-3 color	.09	.10	.09	.10	.09	.10
300 vis., 3-3½ color	.10	.11	.10	.11	.10	.11
350 vis., 3½-4 color	.11	.12	.11	.12	.11	.12
450 vis., 3½-4 color	.12	.12½	.12	.12½	.12	.12½
550 vis., 3½-4 color	.12½	.13¼	.12½	.13¼	.12¼	.13¼
Red Neutral:						
200 vis., 4½-5 color	.09½	.10	.09½	.10	.09½	.10
300 vis., 5-6 color	.11	.12	.11	.12	.11	.12
500 vis., 4½-5 color	.12¼	.13	.12¼	.13	.12¼	.13
600 vis., 6½ plus color	.13	.13½	.13	.13½	.13	.13½
700 vis., 6½ plus color	.14	.15	.14	.15	.14	.15

Note—Bright Stocks are not manufactured commercially on the Pacific Coast.

NEW YORK (BAYONNE) REFINERY PRICES

	Aug. 11		Aug. 4		July 28	
Gasoline, U. S. Motor, 58-60, 437 e.p.	.05¼	.06	.05½	.05¾	.05½	.05¾
Kerosene, water white, 41-43	.04¾		.04¾		.04¾	
*Fuel Oil, Bunker "C," 41-43	.70		.75		.80	
†Fuel Oil, Diesel, 28-30, per bbl.	1.40		1.45		1.50	
Gas Oil, 28 gravity plus	.04		.04		.04	
25 pale Paraffin Oil, tank car	.10¼		.10¼		.10¼	
28 pale Paraffin Oil, tank car	.07¼		.07¼		.07¼	
280 red Paraffin Oil, tank car	.12½		.12½		.12½	
250 red Paraffin Oil, tank car	.11½		.11½		.11½	
225 red Paraffin Oil, tank car	.10		.10		.10	
200 red Paraffin Oil, tank car	.09¼		.09¼		.09¼	
Domestic heating oil, min. 32 grav., tank car	.04		.04		.04	
Refined Wax:						
120-122 a.m.p., per lb.	.03		.03		.02⅞	
125-127 a.m.p., per lb.	.03⅛		.03⅛		.03	
130-132 a.m.p., per lb.	.03⅝		.03⅝		.03½	
133-135 a.m.p., per lb.	.04⅛		.04⅛		.04	
135-137 a.m.p., per lb.	.04⅝		.04⅝		.04½	
Petrolatum in barrels in carload lots, per pound:						
Dark Green	.01⅝		.01⅝		.01⅝	
Amber	.02⅛		.02⅛		.02⅛	
Extra Amber	.02⅞		.02⅞		.02⅞	
Cream	.05⅝		.05⅝		.05⅝	
Lily White	.06½		.06½		.06½	
Snow White	.07		.07		.07	

*Lighterage 5 cents a barrel extra. †Lighterage 6.5 cents per barrel.

NEW YORK (BAYONNE) EXPORT PRICES

	Aug. 11		Aug. 4		July 28	
600, steam refined cylinder stocks, in bbls.	.17½	.18	.17½	.18	.15½	.16
635, steam refined	.19	.20	.19	.20	.16	.16½
650, steam refined	.20	.21	.20	.21	.18	.18½
600, Pennsylvania Flash	.22	.23	.22	.23	.19½	.20
630, Pennsylvania Flash	.27¾	.28	.27¾	.28	.25¾	.26½
600, Warren E	.22	.23	.22	.23	.19	.20
600, Oil City E	.21	.22	.21	.22	.18	.18½
Light 140-150 Bright Stocks	.30	.33	.30	.33	.24¼	.24½
Dark 140-150 Bright Stocks	.29	.31	.29	.31	.23½	.24

LOS ANGELES EXPORT PRICES

	Aug. 11		Aug. 4		July 28	
Kerosene, water white	.03¾	.05	.03½	.05½	.03½	.05½
U. S. Motor gasoline, 53-55, 437 e.p.	.03½	.04½	.04	.05	.04½	.06
58-60, 400 endpoint gasoline	.03¾	.04¾	.04¼	.05¼	.05	.06

CRUDE OIL PRICES

OKLAHOMA, KANSAS, NORTH AND EAST CENTRAL TEXAS

Kansas, Oklahoma and North Texas (July 22, 1931)† ..... .40
Oklahoma (July 27, 1931)†..... .50
East Texas (July 17, 1931)‡ ..... .15
Rusk County, Tex. (April 6, 1931)*.... .35
Corsicana heavy (June 3, 1931)†..... .22
Other fields.....See gravity table

*Posted by Panola Pipe Line Co. †Posted by Magnolia Petroleum Co., June 20; Stanolind Oil & Gas Co., June 25. †Posted by Magnolia Petroleum Co. ‡Posted by Tidal Western Oil Co. ‡Posted by Continental Oil Co. §Sinclair Refining Co.

TEXAS PANHANDLE

Gray County, Wheeler County and Carson-Hutchinson Counties.See gravity table

WEST TEXAS

Iatan and Westbrook..Same as North Texas
Crane, Upton, Crockett, Howard, Glasscock, Ector, Winkler and Pecos Counties* ..... $ .25
Lea County, N. Mex.* ..... .25

*The Texas Company, July 23, 1931. All other companies, July 24.

EASTERN STATES

Joseph Seep Purchasing Agency
(Effective August 3, 1931)

Penna Grade Oil in National Transit Lines (Pennsylvania) $1.70
Pennsylvania Grade Oil in Southwest Pennsylvania Lines 1.55
Penna Grade Oil in Eureka Pipe Line Lines (West Virginia) 1.45
Penna Grade Oil in Buckeye Pipe Line Lines (Ohio) 1.30
Corning Grade Oil in Buckeye Pipe Line Co.'s Line ..... .65
Ragland Grade Oil in Cumberland Pipe Lines (Kentucky) (Jan. 16, 1931)... .80
Wayne district Oil in Cumberland Pipe Lines (April 23, 1931)..... 1.17

Tide Water Pipe Co.
(Effective July 11, 1931)

Bradford, Pa., crude $1.95
Allegany, N. Y., crude 1.95

Pure Oil Co.
(Effective July 11, 1931)

Cabin Creek, W. Va. $1.45
Kelly's Creek, W. Va. 1.45
Bradford Hollow, W. Va. 1.45

GULF COAST

Grade A and Grade B classifications discontinued by all companies excepting Sun Pipe Line Co., which pays 40 cents for Grade A and Humble Oil & Refining gravity prices for Grade B, effective July 24 .....See gravity table
Jennings, La. (July 13, 1931)* ..... $ .30
Lockport, La. (July 8, 1931)† .....See Gulf Coast gravity table
Refugio light.....See gravity table
Refugio heavy (July 24, 1931)‡ ..... .44
Markham (July 28, 1931)§ ..... .37
High Island (July 24, 1931)† ..... .35

*Gulf Refining Co. †Vacuum Oil Co. ‡Humble Oil & Refining Co. §The Texas Company. Other companies July 24. †Gulf Pipe Line Co.

NORTH LOUISIANA-ARKANSAS

Smackover, Ark. (all grades) (June 2, 1931)* .....$ .37
Smackover, Ark. (all grades) (June 2, 1931)† ..... .30
Smackover (all grades) (July 24, 1931)‡ .30
Urbana (July 24, 1931)‡..... .20
Bellevue, La. (June 3, 1931)..... .25
Urania (June 3, 1931)..... .30
Calion, Ark., heavy (June 3, 1931)..... .37
East El Dorado, Ark. (June 3, 1931).. .25
Stephens, Ark. (June 3, 1931)..... .20
Other fields.....See gravity table

*Posted by The Texas Company on June

(Continued on Page 126)

CRUDE OIL GRAVITY TABLE

	Oklahoma, Kansas, North Central and East Central Texas	Oklahoma, Kansas, North Central and East Central Texas	Oklahoma, North Central Texas, North Louisiana	North Louisiana and Arkansas	Salt Creek, Wyoming	Gulf Coast
	1	2	3	4	5	6
Below 25 degrees	....	....	....	....	....	$0.40
25-25.9 degrees	....	....	....	....	....	.41
26-26.9 degrees	....	....	....	....	....	.42
27-27.9 degrees	....	....	....	....	....	.43
Below 28 degrees	....	$0.27	....	....	....	....
28-28.9 degrees	....	.30	....	....	....	.44
Below 29 degrees	$0.30	....	....	$0.30	$0.30	....
29-29.9 degrees	.31	.31	....	.31	.31	.45
30-30.9 degrees	.32	.32	....	.32	.32	.46
31-31.9 degrees	.33	.33	....	.33	.33	.47
32-32.9 degrees	.34	.34	....	.34	.34	.48
33-33.9 degrees	.35	.35	....	.35	.35	.49
34-24.9 degrees	.36	.36	....	.36	.36	.50
35-35.9 degrees	.37	.37	....	.37	.37	.51
Below 36 degrees	....	....	$0.35	....	....	....
36 degrees and above	....	....	.40	....	....	....
36-36.9 degrees	.38	.38	....	.38	.38	.51
37-37.9 degrees	.39	.39	....	.39	.39	.51
38-38.9 degrees	.40	.40	....	.40	.39	.51
39-39.9 degrees	.41	.41	....	.41	.39	.51
40 degrees and above	.42	.42	....	.42	.39	.51

Note—The Magnolia Petroleum Co.'s Mid-Continent crude oil prices and the days on which they became effective are as follows: June 20, Cement, Walters and Duncan, Oklahoma, 32 cents; Hewitt and Graham, Oklahoma, 28 cents; Healdton, Oklahoma, 25 cents. On July 22, North and North Central Texas, including Burkburnett, Archer, Stephens, Henrietta, Electra, Comanche and Olden, 40 cents. On July 22, northern Oklahoma including only Cushing, Yale, Oklahoma City, Morrison, Wewoka and Seminole, 40 cents. July 22, the company withdrew its posted price in Augusta, Kansas, the only field in that State in which it purchased. Effective July 30, Bull Bayou, Louisiana, 40 cents; Haynesville, Louisiana, 32 cents; Pine Island, Louisiana, 36 cents; Cotton Valley, Louisiana, 30 cents; El Dorado, Arkansas, 31 cents; Rainbow, Arkansas, 31 cents; El Dorado east field, Arkansas, 30 cents; Smackover district, Arkansas, 30 cents. Effective July 30, East Central Texas including only Mexia, Wortham, Corsicana light and Panola County, 40 cents; Thrall, 40 cents and Lytton Springs, 40 cents.

Column 1—Stanolind Crude Oil Purchasing Co., July 24, 1931, followed on same day by Tidal Refining Co., Continental Oil Co. and Kantoex Refining Co., and by Derby Oil Co. on August 1.

Column 2—Carter Oil Co., July 24, followed by Barnsdall Oil Co., Pure Oil Co., Gypsy Oil Co., Mid-Continent Petroleum Corp., Empire Oil & Refining Co., Skelly Oil Co. (in Kansas), Vickers Petroleum Co. (Kansas).

Column 3—The Texas Company, July 23, 1931; Humble Oil & Refining Co. and Gulf Pipe Line Co., July 24, in North Central Texas and East Central Texas.

Column 4—Standard Oil Co. of Louisiana on July 24, 1931; Louisiana Oil & Refining Co., Gulf Refining Co. of Louisiana, Spartan Refining Co. on July 25.

Column 5—Mid West Refining Co., July 24.

Column 6—The Humble Oil & Refining Co., July 24; Gulf Pipe Line Co., Sinclair Refining Co., July 24; The Texas Company, July 28, but Texas pays 52 cents for 36-36.9; 53 cents for 37-37.9; 54 cents for 38-38.9; 55 cents for 39-39.9 and 56 cents for 40 and above.

CALIFORNIA CRUDE OIL PRICES

STANDARD OIL CO. OF CALIFORNIA

For its current purchases of crude oil at the well (unless otherwise specified) for allowable crude oil produced in accordance with allocations made by the California Statewide Curtailment Committee. All gravities above those quoted take highest price offered in that field. Effective June 19, 1931, at 7 a. m.

Gravity	Signal Hill	Seal Beach, Alamitos Heights	Huntington Beach	Inglewood	Olinda-Brea Canon	Torrance	Richfield	Coyote Hills	Santa Fe Springs	Midway-Sunset, Elk Hills, Buena Vista Hills	Lost Hills
14-14.9	$.65	$.65	$.65	$.65	$.65	$.65	$.65	$.65	...	$.55	$.55
15-15.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
16-16.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
17-17.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
18-18.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
19-19.9	.65	.65	.65	.65	.65	.65	.65	.65	...	.55	.55
20-20.9	.65	.65	.65	.66	.66	.65	.65	.65	...	.55	.55
21-21.9	.65	.65	.65	.68	.67	.65	.66	.65	...	.55	.57
22-22.9	.65	.65	.66	.70	.68	.66	.68	.65	...	.56	.59
23-23.9	.67	.67	.68	.72	.70	.67	.70	.66	...	.58	.60
24-24.9	.69	.69	.70	.74	.72	.68	.72	.67	$.65	.61	.62
25-25.9	.71	.71	.72	.76	.74	.70	.74	.69	.65	.64	.64
26-26.9	.73	.73	.74	...	.76	...	...	.71	.65	.66	.66
27-27.9	.75	.75	.76	...	.78	...	...	.73	.68	.68	.67
28-28.9	.77	...	...	...	.80	...	...	.75	.71	.71	.69
29-29.9	.79	...	...	...	...	...	...	.77	.73	.74	.71
30-30.9	.81	...	...	...	...	...	...	.79	.75	.76	.72
31-31.9	...	...	...	...	...	...	...	...	.78	...	...
32-32.9	...	...	...	...	...	...	...	...	.80	...	...
33-33.9	...	...	...	...	...	...	...	...	.83	...	...
34-34.9	...	...	...	...	...	...	...	...	.85	...	...
35-35.9	...	...	...	...	...	...	...	...	.87	...	...

Standard Oil Co. of California prices in other fields:

Wheeler Ridge—55 cents per barrel for all grades (14° to 25.9°).

Coalinga—55 cents for all grades from 14° to 24-24.9°; 57 cents for 25 gravity.

Newhall, McKittrick and Kern River—55 cents for all grades (14° to 19.9°).

Montebello—65 cents for all grades (14° to 25.9°).

Whittier and LaHabra—65 cents for all grades (14° to 22.9°).

Elwood Terrace, f.o.b. ship—32° to 33.9°, 79 cents; 34° to 34.9°, 81 cents; 35° to 35.9°, 84 cents; 36° and above 87 cents.

Playa Del Rey—Prices subject to field gathering charge of 5 cents per barrel—19° to 19.9°, 65 cents; 20° to 20.9°, 65 cents; 21° to 21.9°, 66 cents; 22° to 22.9°, 67 cents; 23° to 23.9°, 68 cents; 24° to 24.9°, 67 cents; 25° and above, 68 cents.

ASSOCIATED OIL CO. PRICES

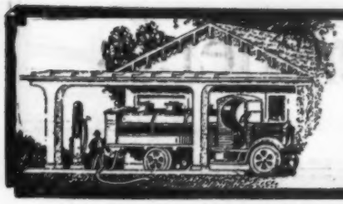
Associated Oil Co. prices, effective June 20, are as follows:

Ventura Avenue, 32 gravity, 58 cents, with 2 cents added for each degree upward to and including 30 gravity, which is 74 cents.

Kettleman Hills, 30 gravity and above, 66 cents.

Potrero, 24 gravity, 59 cents with 2 cents added for each degree upward to 34 gravity, which is 69 cents.

(Continued on Page 130)



TANK WAGON MARKETS

Tank wagon quotations for gasoline and kerosene in United States as furnished by the larger marketing concerns August 11

ALL TANK WAGON AND SERVICE STATION QUOTATIONS INCLUDE TAXES

STANDARD OIL CO. (INDIANA)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Chicago	14.0	14 6	3.0	9.0
Decatur, Ill.	14.4	14.4	3.0	9.0
E. St. Louis	13.7	13.7	3.0	8.2
Joliet	14.4	14.4	3.0	9.0
Peoria	14.4	14.4	3.0	9.0
Quincy	14.2	14.2	3.0	8.8
Davenport, Ia.	14.5	14.5	3.0	9.3
Des Moines	14.5	14.5	3.0	9.3
Keokuk	14.5	14 5	3.0	9.3
Sioux City	14.1	14.1	3.0	8.9
Duluth, Minn.	15.5	15.5	3.0	9.9
Mankato	15.1	15.1	3.0	9.7
Minneapolis	15.2	15.2	3.0	9 9
La Crosse, Wis.	16.2	16.2	4.0	10.0
Milwaukee	15.1	15.1	4.0	8.9
Madison	15.3	15.3	4.0	9.1
Detroit, Mich.	10.3	10.3	3.0	10.7
Grand Rapids	14.7	14.7	3.0	10.4
Saginaw	14.9	14.9	3.0	10.8
Evansville, Ind.	15.1	15.1	4.0	9.9
Indianapolis	15.3	15 3	4.0	10.1
South Bend	15.4	15.4	4.0	10.2
Fargo, N. D.	16.9	16.9	3.0	11.9
Huron, S. D.	16.3	16.3	4.0	10.7
Sioux Falls	15.8	15.8	4.0	10.4
K. C., Mo.	13 9	13.9	3.0	7.6
Springfield*	13.9	13.9	3.0	8.5
St. Louis*	12.9	12.9	2.5	8.3
St. Joseph	13.5	13.5	3.0	7.5
Wichita, Kans.	12.8	12.8	3.0	7.8
Bartlesville, Okla.	13.0	16.0	5.0	7.5

*State tax 2 cents, remainder city tax.

A third grade of gasoline, "Stanolind Blue," is sold at all major points at a price 3 cents or more below the price on the regular grade.

Effective April 15—Discounts on Q.D.A. on 1,000 gallons or more per month throughout territory; Red Crown Ethyl Gasoline, 3 cents off tank wagon price; Red Crown gasoline, 2½ cents off tank wagon price; Stanolind Blue gasoline, 1 cent off tank wagon price. On deliveries of 75,000 gals. or more each classification allowed 1c additional discount.

Discounts on resellers authorized agent's agreement: Same amounts as above except made off service station price instead of tank wagon price.

SOUTHWESTERN DISTRICT

Magnolia Petroleum Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Dallas, Tex.	13.0	14.0	4.0	8.0
Fort Worth	11.0	13.0	4.0	8.0
Houston	11.0	13.0	4.0	11.0
San Antonio	11.0	13.0	4.0	10.0
El Paso	13.0	14.0	4.0	12.0
Texarkana	16.0	16.0	4.0	11.0
Muskogee, Okla.	13.0	15.0	5.0	8.0
Okla. City	13.0	15.0	5.0	7.0
Tulsa	13.0	16.0	5.0	8.0
Ft. Smith, Ark.	14.5	15.5	5.0	11.0
Little Rock	16.0	16.0	6.0	11.0

One-cent rebate made from posted station prices to cash purchasers in Louisiana, Arkansas and Tennessee.

NEBRASKA

Standard Oil Co. (Nebraska)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Omaha	15.25	16.25	4.0	9.25
McCook	16.0	17.75	4.0	10.75
Norfolk	15.75	16.75	4.0	9.75
N. Platte	16.75	17.75	4.0	10.50
Scottsbluff	16.0	16.0	4.0	10.25

Note—Dealers' discounts allowed as follows: Red Crown Ethyl, 3 cents off station price; Red Crown, 2½ cents off normal station price; Red Crown, 2½ cents off normal service station price; Nebraska Blue (third grade) 1-cent off normal service station price.

ROCKY MOUNTAIN DISTRICT

Continental Oil Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Denver, Colo.	15.0	18 0	4.0	12.5
Pueblo	15.0	18.0	4.0	12.0
Grand Junction	17.0	20.0	4.0	14.5
Casper, Wyo.	15.0	18.0	4.0	10.0
Cheyenne	16.0	19.0	4.0	11.5
Butte, Mont.	19.0	22.0	5.0	16.0
Billings	21.0	24.0	5.0	14.5
Great Falls	21.0	24.0	5.0	16.0
Helena	21.0	24.0	5.0	16.0
Salt Lake, Utah	17.5	20.5	4.0	16.0
Albu'que, N.M.*	17.0	20.0	5.0	14.0
Boise, Idaho	20.5	23.5	5.0	18.0
Twin Falls	20.5	23.5	5.0	18.0

*One-cent excise city tax.

NEW YORK AND PART OF NEW ENGLAND DISTRICT

Standard Oil Co. (New York)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Albany, N. Y.	16.6	17.6	2.0	15.6
New York*	15.3	15.3	2.0	14.3
Buffalo	15.8	15.8	2.0	14.8
Rochester	16.0	16 0	2.0	14.8
Syracuse	16.8	16.8	2.0	14.8
Boston, Mass.	16.5	16.5	3.0	13.5
Augusta, Me.	13.8	13.8	4.0	14.8
Manch'tr, N. H.	18.4	18.4	4 0	14.0
Bulrington, Vt.	19.3	19.3	4.0	15.3

*Prices in steel barrels.

PENNSYLVANIA-DELAWARE AND PART OF NEW ENGLAND

Atlantic Refining Co.

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Pittsburgh, Pa.	*10.0	*11.0	...	11.0
Philadelphia	*10.0	*10.0	...	11.0
Scranton	*10.0	*11.0	...	11.0
Allentown	*10.0	*11.0	...	11.0
Altoona	*10 0	*11.0	...	11.0
Erie	*10.0	*11.0	...	11.0
Dover, Del.	13.0	15.0	3.0	11.0
Wilmington	13.0	13.0	3.0	11 0
Springf'd, Mass.	15.5	16.0	3.0	10.0
Worcester	15.3	16.0	3.0	11 0
Boston	13.0	15.0	3.0	11.0
Providence, R.I.	13.5	13.0	2.0	10.0
Hartford, Conn.	14.5	15.5	2.0	10.0
New Haven	14.6	15.5	2.0	10.0

*Does not include tax of 3 cents in Pennsylvania. Pennsylvania tax is collected by the dealer and paid by him direct to the State. The above prices are subject to discounts to dealers and to commercial accounts under contract for one year in accordance with Code of Ethics.

CENTRAL SOUTH DISTRICT

Standard Oil Co. (Louisiana)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
N. Orleans, La.	14.5	14.5	6.0	12.0
Baton Rouge	14.5	15.5	5.0	12.0
Alexandria†	15.5	16 5	6.0	12.0
Lafayette*	15.5	16.5	6.0	12.0
Lake Charles*	15.5	16.5	6.0	12.0
Shreveport	14.5	15.5	5.0	12.0
Knoxville, Tenn.	18.0	19 0	6.0	13.5
Memphis	14.0	15.0	6.0	10.0
Chattanooga	17.5	18.5	6.0	12.0
Nashville	17.0	18.0	6.0	12.5
Bristol	17.0	18.0	6 0	14.0
Lt. Rock, Ark.	15.5	16.0	6.0	11.0

*Includes city tax of 1 cent. Louisiana kerosene prices include 1-cent state tax. New Orleans kerosene price also includes 1-cent city tax.

†Gasoline price at Alexandria includes 1-cent tax in parish of Rapides.

Two-cent discount off gasoline and kerosene tank wagon price to dealer and commercial accounts.

OHIO

Standard Oil Co. (Ohio)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Ohio points	15.0	16.0	4.0	*13.0

Dealers and commercial accounts 2 cents under tank wagon.

*Service station price 13.0 cents.

PACIFIC COAST TERRITORY

	Gasoline			Kero.
	Wh'l's'e price	Retail* price	Incl'ds tax of	tank wagon
Fresno	19.5	16.5	3.0	17.0
San Francisco	19.5	16.5	3.0	15.5
Los Angeles	19.0	16.0	3.0	15.5
Reno, Nev.	23.5	20.5	4.0	19.0
Portland, Ore.	21.0	18.0	4.0	16.5
Seattle, Wash.	22.0	19.0	5.0	16.5
Tacoma	22.0	19.0	5.0	16.5
Spokane	25.5	22.5	5.0	20.5
Phoenix, Ariz.	16.5	17.5	5.0	20.0

Above prices are at company's plant or depots as company does not operate stations. A 6-cent per gallon discount is given dealers and customers taking tank wagon lots except in Phoenix where the discount is 3 cents plus a 2-cent special temporary discount subject to withdrawal at any time.

*Retail prices posted by Standard Stations, Inc., a subsidiary.

ATLANTIC COAST DISTRICT

Standard Oil Co. (New Jersey)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atl'tic City, N.J.	13.7	13.7	3.0	10.6
Newark	12.7	13.7	3.0	9.5
Annapolis, Md.	14.2	15.2	4 0	10.0
Baltimore	13.4	14.4	4.0	8.5
Cumberland	15.2	16.2	4.0	11.0
Wash'ton, D.C.	11.9	13.9	2.0	9.7
Danville, Va.	16.0	17.0	5.0	10.5
Norfolk	14 5	15.5	5.0	9.3
Petersburg	15.5	16.5	5.0	10.3
Richmond	14.9	15.9	5.0	9.7
Roanoke	16.2	17.2	5.0	11.0
Charles'n, W.Va.	14.7	15 7	4.0	10.5
Keyser	15.3	16.3	4.0	11.1
Parkersburg	13.4	14.4	4.0	9.3
Wheeling	14.6	15.6	4.0	10.4
Charlotte, N. C.	17.5	18.5	6 0	11 3
Hickory	17.8	18.8	6.0	11.6
Mt. Airy	17.7	18.7	6.0	11.5
Raleigh	17.4	18.4	6.0	11.3
Salisbury	17.7	18.7	6.0	11.5
Charleston, S.C.	15 5	16.5	6.0	9.3
Columbia	17.4	18.4	6.0	11.3

A 2-cent per gallon discount off the gasoline tank wagon price is offered to dealers, except in Washington, D. C. and in States of New Jersey and Maryland where discount is 3 cents.

SOUTHERN DISTRICT

Standard Oil Co. (Kentucky)

	Gasoline			Kero.
	Tank wagon	Service station	Incl'ds tax of	tank wagon
Atlanta, Ga.	14.0	14.0	6.0	12 5
Augusta	18.0	20.0	6.0	14.0
Macon	16.0	16.0	6.0	12.0
Savannah	16 0	16 0	6 0	13 0
Birm'ham, Ala.	15.0	15.0	6.0	13.0
Mobile	17.0	17.0	5.0	10.0
Montgomery	17.0	17.0	5.0	13.5
Clarks'le, Miss.	18.0	20.0	5.0	13.5
Jackson	13.0	13.0	5.0	11.5
Natchez	18.0	20.0	5.0	13 5
Gulfport	16.0	16.0	5.0	13.5
Vicksburg	14.0	14.0	5.0	11.5
Jack'ville, Fla.	16.0	17.0	7.0	12.0
Miami	19 0	21.0	7.0	13.0
Pensacola	19.0	20.0	7.0	13.0
Tampa	16.0	17.0	7.0	12.0
Lexington, Ky.	17.0	18.0	5.0	12.0
Covington	16.0	17.0	5.0	11.0
Loul ville	16.0	17.0	5.0	10.0
Ashland	17.0	19.0	5.0	13.0
Paducah	16.0	17.0	5.0	11.0
Bowling Green	19.0	21.0	5.0	14.5
Corbin	18.0	19.0	5.0	15.0

A third grade, "Kyso Green," is sold at a price generally 2 cents below the price on the regular grade.

In addition to the state tax of 4 cents on gasoline, Montgomery has city tax of 1 cent on gasoline and one-half cent on kerosene. Kerosene prices in Georgia include 1-cent tax. In Florida, an inspection fee of 0.125 cent; in Alabama, an inspection fee of one-half cent on kerosene and one-fourth cent on gasoline. To Pensacola, Montgomery, Birmingham and Mobile state taxes add 1-cent levy tax. To Gulfport state tax add privilege tax of 3 cents.

Effective April 2, price to dealers 2 cents under posted tank wagon price.

NAPHTHA

	Tank wagon	Tank car
Oleum spirits	12.0	8.0
V.M.&P. naphtha	14.0	9.5
Cleaners' naphtha	16.2	11.0
Stanisol	16.2	11.0

Tank wagon prices f.o.b. Chicago; tank car prices f.o.b. Whiting.

STANOLIND FURNACE OIL IN CHICAGO

All dumps of 50 gallons or more $0.07

Note—Outside Chicago furnace oils discount of 1 cent per gallon is given on deliveries of 100 to 349 gallons and 1½ cents on deliveries of 350 gallons or more.

CRUDE PRICE CHANGES

The Derby Oil Co., on July 27 announced it would pay 50 cents a barrel for oil 40 degrees and above, and 40 cents a barrel for oil below 40 degrees. Same company changed prices effective August 1, to the same prices as in the Stanolind Crude Oil Purchasing Co.'s schedule.

TANK WAGON CHANGES

Continental Oil Co., advanced the gasoline tank wagon and station prices 1 cent throughout Colorado and restored normal prices in the cut rate points, August 1. On August 4 these prices were advanced 2½ cents in Boise, Idaho, and 3½ cents in Twin Falls, Idaho. On August 6 these prices were advanced 1 cent in Mon-

(Continued on Page 132)

CRUDE OIL PRICES

(Continued from Page 125)

2, 1931, and by Gulf Refining Co. on June 3. †Posted by Magnolia Petroleum Co. on June 3. ‡Posted by Standard Oil Co. of Louisiana July 24, 1931. Bellevue posted by Magnolia Petroleum Co., Standard Oil Co. of Louisiana having ceased posting on July 11, 1931. Urania by Louisiana Oil Refining Co. Calion by Gulf Refining Co.; East El Dorado by Gulf Refining Co. and Magnolia Petroleum Co. Stephens posted by Louisiana Oil Refining Co. and Atlantic Oil Producing Co.

SOUTH CENTRAL AND SOUTHWEST TEXAS

Darst Creek (July 25, 1931)	$ .37
Luling (June 3, 1931)†	.35
Mirando (July 21, 1931)	.44
Pettus (July 23, 1931)‡	.50
Salt Flat (July 23, 1931)‡	.37
Thrall§	..
Lytton Springs (Lockhart) See gravity table	
Dobrowolski¶	..
Same as Mid-Continent gravity scale up to and including 38-38.9°	
Somerset¶	..
Same as Mid-Continent gravity scale up to and including 38-38.9°	

‡The Texas Company, July 23; Gulf Pipe Line Co. and Humble Oil & Refining Co., July 24. §Thrall prices same as North Central Texas less 19¼ cents per cwt. freight. ¶Grayburg Oil & Refining Co., Pioneer Oil & Refining Co. and Texas Petroleum Products Co. ‖Pioneer Oil & Refining Co. In Mirando Magnolia Petroleum Co. posted July 21, The Texas Company July 23, Humble Oil & Refining Co. and Gulf Pipe Line Co. July 24.

ROCKY MOUNTAIN STATES

Ohio Oil Co.-Midwest Refining Co.

Iles (July 24, 1931)	$ .45
Fort Collins (July 24, 1931)	.35
Florence (July 24, 1931)	.32
Wellington (July 24, 1931)	.30
Dutton Creek (July 24, 1931)	.45
Rock Creek, Wyo. (July 25, 1931)	.50
Frannie, light (July 24, 1931)	.40
Frannie, heavy (July 24, 1931)	.30
Salt Creek.....Mid-Continent gravity table	
Big Muddy (July 25, 1931)	.45
Grass Creek (July 25, 1931)	.65
Elk Basin (July 24, 1931)	.65
Lance Creek (July 25, 1931)	.80
Poison Spider (Mar. 5, 1931)	.70
Notches (Mar. 14, 1927)	.65
Hudson (June 2, 1931)	.65
Lander (Mar. 5, 1931)	.40
Rex Lake (Feb. 22, 1930)	1.10
Osage (Apr. 15, 1931)	.98
Lost Soldier (Aug. 1 1931)	.35
Hamilton Dome (Mar. 14, 1927)	.85
Greybull (July 24, 1931)	.65
Torchlight (Oct. 28, 1930)	1.25
Cat Creek (July 25, 1931)	.65
Pondera (July 25, 1931)	.70
Sunburst, Mont. (July 25, 1931)	.70
Hogback, N. Mex. (July 24, 1931)	.72
Artesia, N. Mex. (July 24, 1931)	.25
Lea County, N. Mex. (July 24, 1931)	.25
Border, Mont.	1.55
Red Coulee, Alberta	1.55
Dry Creek, Mont. (July 24, 1931)	.60
Maljamar (July 22, 1931)	.20
Jackson (July 23, 1931)	.35

Note—Salt Creek, Cat Creek, Dry Creek, Dallas-Derby, Hudson, Greybull and Hogback posted by Midwest Refining Co. and remainder by Ohio Oil Co. Both companies posted Grass Creek light and Elk Basin. Lost Soldier posted by Producers & Refiners Corp. Artesia, Jackson and Maljamar posted by Continental Oil Co. Border and Red Coulee posted by Imperial Refining Co. Ohio Oil Co. ceased posting Artesia on March 5, 1931. Lea County posted by Humble Oil & Refining Co. Fort Collins, Wellington, Orchard, Florence, Rattlesnake and Table Mesa by the Continental Oil Co. Osage posted by Arro Oil & Refining Co.

MIDDLE WESTERN STATES

Ohio Oil Co.

(Effective July 24, 1931)

Lima	$ .70
Wooster	.73
Illinois	.55
Indiana	.35
Princeton	.55
Plymouth	Shut in
Western Kentucky	.50
Midland, Mich.* (July 24, 1931)	.55
Dundee, Mich.†	..
Same as Stanolind Crude Oil Purchasing Co.'s Mid-Continent gravity scale	
Upper and Lower Traverse Sands. Mich.†	
....Same as Mid-Continent gravity scale	
Somerset, Ky. (July 24, 1931)	.55
Hart County, Ky. (July 27, 1931)‡	.50
Petrolia (Canada) (July 24, 1931)¶	1.75
Oil Springs (Canada) (July 24, 1931)¶	1.82

*Posted by Pure Oil Co. †Posted by Standard of Indiana for boat shipment. ‡Posted by Stoll Refining Co. ¶Posted by Imperial Oil Ltd. Somerset, Ky., crude purchased by Ashland Refining, Ashland, Ky., and delivered through Cumberland Pipe Line.

MEXICAN CRUDE

Panuco*	$ .44

*F.o.b. ship, based on June transactions and exclusive of taxes and bar dues.

Of Interest to Sales Departments

"Regular Priced" Motor Fuels Meet U. S. Requirements

The great majority of the "regular price" gasolines sold at service stations throughout the United States pass the requirements of the new specification for United States Government motor gasoline as indicated by a survey of commercial motor fuels just completed by the United States Bureau of Mines, Department of Commerce. The largest percentage of failure to meet the Government specification occurred in connection with the sulphur requirement: 15.5 per cent of the gasolines that were sold at the "regular" price or below failed to pass the requirement which limits the sulphur content to 0.10 per cent. No sample failed to pass the corrosion test, four samples failed to meet the distillation requirements, and four samples had vapor pressures in excess of the maximum that is permitted under the Federal specification, which is 12 pounds per square inch.

That the volatility of commercial gasoline sold last March was noticeably higher than that of the gasolines which were sold during August of the previous year is concluded by comparing the results of the Reid vapor pressure test and the distillation test, made on samples collected last March and the results obtained during the survey of August, 1930.

The gasoline survey in which these samples were obtained is the twenty-third semiannual survey that has been made by the Bureau of Mines. In this survey a total of 312 samples were collected by Bureau of Mines engineers or chemists directly from pumps at service stations in 20 cities throughout the United States.

Publish Three Reports

The results of the survey are to be published in three reports. The first of these three reports is Report of Investigations No. 3129, Twenty-third Semiannual Motor Gasoline Survey—Part One, by E. C. Lane, E. L. Garton and A. J. Kraemer. This paper deals specifically with data relative to gravity, Reid vapor pressure, and distillation range of the 312 samples that were collected and analyzed in this survey.

The Federal Specifications Board, under date of July 21, 1931, has promulgated a revised specification for United States Government motor gasoline. The results obtained in the twenty-third semiannual gasoline survey afford an opportunity to compare the provisions of the new specification with the properties of gasoline that were being sold to the general public throughout the United States at the time these samples were taken. Report of Investigations No. 3142, Twenty-third Semiannual Motor Gasoline Survey, II—Specification Data, by E. C. Lane, presents a discussion of the properties of 207 samples of "competitive price gasolines" from the standpoint of the new Government specification, and also gives the results of the analysis of 105 samples of "premium price motor fuels" from this point of view.

Copies of Reports Nos. 3129 and 3142 may be obtained without cost upon application to the Section of Publications, United States Bureau of Mines, Washington, D. C.

The third and concluding report of the series will contain data on the "gum" content, color, and "doctor" test of the samples, and an "anti-knock" rating in terms of octane number on each sample. The service station price and the tax will also be given for each example. This report is in preparation and will be available without cost when it has been issued.

JAPAN PROPOSES TAX ON MOTOR GASOLINE

WASHINGTON, D. C., Aug. 8.—The consumption gasoline tax is now proposed by the Japanese Bureau of Revenue to allow present taxes on motor vehicles to be lowered.

The proposed tax is to be equal to 2½ or 5 cents per gallon and on the basis of present estimated consumption this should yield from 8,000,000 to 16,000,000 yen annually or from nearly $4,000,000 to $8,000,000 annually.

It is planned to turn the revenue so raised over to municipal governments to take the place of motor vehicle taxes in part. No provision has been made to utilize this revenue for road construction.

An official Japanese survey covering 11 of the principal districts in Tokyo shows 442 gasoline pumps installed in filling stations and garages. It is estimated there are at least 150 pumps in the four remaining districts. Practically all of these pumps are of domestic manufacture. About 175 of them are owned by the Rising Sun and an American company, the former bringing its pumps from England and the latter obtaining them from the United States.—C.E.K.

CANADIAN PLANT SALES OVER NINETY MILLION

CHATHAM, Ontario, Aug. 9.—Official figures just released show that the output of Canadian refineries in 1930 was valued at $91,787,205, this being only 8 per cent under the record value produced in 1929. It was 11 per cent more than 1928, the next best year on record. The total includes figures for crude oil refining and the compounding of lubricating oils and greases.

In 1930, 15 Canadian refineries turned out $90,809,711 worth of refined products, paying $71,307,879 for crude oil, the quantity of crude amounting to 1,064,434,974 gallons. Of this total 65 per cent was brought in from the United States, about 30 per cent from South America, with something under 5 per cent obtained from Canadian wells.

Only one refinery in Alberta operated entirely on Canadian crude, though three others in that province and two Ontario plants used some Canadian oil but obtained the bulk of their crude from the United States fields. The two other refineries in Ontario, one in Manitoba, one of the two in Quebec and one of the two in British Columbia used only United States crude. The remaining refineries, including one at Regina, Saskatchewan, and one in Nova Scotia obtained crude from both South America and the United States.

Gasoline production from Canadian refineries in 1930 totaled 455,599,417 gallons, of which slightly less than 170,000,000 gallons were made by the cracking process. For blending purposes, considerable quantities of natural gasoline were imported into Canada.

Sales of fuel and gas oils from refineries amounted to 375,250,000 gallons in addition to which operating companies used approximately 60,000,000 gallons for fuel purposes. Other sales included 43,500,000 gallons of kerosene, 37,500,000 gallons of asphalt, 18,000,000 gallons of lubricating oils, 13,500,000 gallons of grease, 7,000,000 gallons of solvent naphtha and over 10,000,000 pounds of paraffin wax and candles.

Sales of the 13 firms compounding lubricating oils and greases amounted to $977,494, lubricating oils accounting for $753,386 of this total. Raw materials for these plants cost $492,550.

INVESTIGATE CHICAGO GASOLINE TAX EVADERS

CHICAGO, Aug. 8.—Laxity on the part of state authorities in Illinois in the prosecution of gasoline tax evaders, and incompetency and outright dishonesty on the part of a number of state oil inspectors, figure in the charges made last week by the Chicago Daily News, following the newspaper's investigations into gasoline bootlegging conditions in the city. It is pointed out that nearly a year has passed since 30 officials and employes of 9 Chicago wholesale gasoline companies were indicted by a grand jury on charges of conspiracy and fraud costing the state hundreds of thousands of dollars in gasoline tax fees and only two persons have been tried and were acquitted. These two operators are still in business although they do not have the required state distributor's license.

State authorities are quoted as saying that the situation warrants the assigning of an assistant attorney-general to Chicago to handle the gasoline bootlegging problem exclusively. Honest oil inspectors have been waylaid and beaten and their lives threatened by members of the "bootlegging ring," and other oil inspectors have not taken samples from tank cars, but have accepted bottles of oil and the word of the distributor. Two oil inspectors have been indicted for failure to perform their duty and eventually fired after a great deal of difficulty, according to a member of the State's Attorney staff.

RUSSIAN TONNAGE GAINS

The Black Sea tonnage on oil routes is increasing while those of North America are decreasing according to a report of John I. Jacobs & Co., Ltd. According to a review issued by the concern:

"The amount of chartering from Russian and Rumanian ports has been very noticeable, and the shorter voyage entailed has been a factor in keeping rates at their present low ebb. Our chartering records show that nearly four times as many fixtures have been made from the Black Sea as from America. The number of part cargoes arranged has also been a feature of the market during recent months, and an indication of the present difficult times which are being experienced. Laid-up returns show increases week by week and at the end of June it is computed that 293 tank vessels, with a total dead weight of just over 2,648,000 tons, were without employment; of these 88 were British, 72 Norwegian, 62 American and 30 Italian.

"The proportion of the world's tonnage solely dependent on coal continues to diminish, and at the beginning of this year was 59 per cent, as against 74 per cent in 1923. It is estimated there will be over 13,000,000 tons dead weight of tankers afloat by the end of this year, and it is difficult to prognosticate any distinctive improvement in the freight situation before the end of 1932."

INCORPORATE VACUUM COMPANY

CHICAGO, Aug. 8.—Vacuum Oil Co., Inc., has been granted a charter to do business in Illinois for 99 years by Secretary of State Stratton. Offices of the corporation in Chicago are located at 59 East Van Buren Street. Issuance of the charter followed the changing of the name of Vacuum Oil Co. to Vacuum Oil Co., Inc., and similar charters have been substituted in the states in which the company has offices. Standard Oil Co. of New York, also, as the result of the Socony-Vacuum merger, is now styled Standard Oil Co. of New York, Inc.

Motor Fuel Demand Shows 3.1 Per Cent Increase Over 1930

Gasoline consumption in 45 states and the District of Columbia in May was 7 per cent greater in April and 3.1 per cent greater in May, 1930, according to a report based on state gasoline tax reports. This increase of 3.1 per cent for May is the same as the increase for the first five months of this year over the same period last year.

The gallonage of the 45 states and the District of Columbia for the five months totaled 4,990,303,000 gallons, which compares with a total of 4,838,117,000 gallons for the same period in 1930. For May the gallonage totaled 1,202,340,000 gallons and 1,165,625,000 gallons in May last year.

Of the 45 states, 16 states, according to the gasoline tax reports, sold less gasoline in May, 1931, than they did in May, 1930. These states were Alabama, Arkansas, Connecticut, Illinois, Maryland, Michigan, Mississippi, Montana, North Carolina, Ohio, Oklahoma, South Carolina, Tennessee, Utah, West Virginia and Wisconsin. For the first five months the following states showed a decreased gallonage when compared with the same period last year: Alabama, Arkansas, Connecticut, Georgia, Idaho, Louisiana, Maryland, Mississippi, North Carolina, Ohio, Oklahoma, South Carolina, Tennessee and Utah.

The following table showing gasoline gallonage was compiled by the American Petroleum Institute:

(Thousands of gallons)

	May, 1931	May, 1930
Alabama	14,626	15,083
Arizona	6,494	6,444
Arkansas	9,984	11,791
Colorado	15,707	14,620
Connecticut	18,991	19,786
Delaware	4,653	3,171
District of Columbia	8,236	7,162
Florida	19,054	18,183
Georgia	19,037	18,886
Idaho	5,577	5,524
Illinois	88,827	90,313
Indiana	43,379	*42,089
Iowa	38,162	32,075
Kansas	36,626	30,080
Kentucky	16,408	15,163
Louisiana	15,909	15,358
Maine	11,145	10,144
Maryland	16,507	16,913
Massachusetts	50,235	47,926
Michigan	73,250	74,214
Minnesota	40,767	32,838
Mississippi	†11,701	14,107
Montana	7,407	10,000
Nebraska	19,751	17,814
Nevada	2,127	1,614
New Hampshire	6,062	5,712
New Jersey	50,518	49,590
New Mexico	4,512	4,458
New York	147,269	137,715
North Carolina	18,237	20,343
North Dakota	12,243	11,914
Ohio	90,615	94,677
Oklahoma	25,650	26,382
Oregon	18,224	15,542
Rhode Island	9,071	7,223
South Carolina	10,196	10,349
South Dakota	12,756	12,540
Tennessee	18,045	18,804
Texas	72,106	68,008
Utah	5,215	5,521
Vermont	4,517	4,287
Virginia	20,952	20,658
Washington	26,290	23,216
West Virginia	12,647	13,188
Wisconsin	40,234	41,164
Wyoming	3,421	3,136
Total	1,202,340	1,165,625
Daily average	38,785	37,601

*Revised. †Estimated.

COMPLETE SUN GASOLINE LINE

NEW YORK, Aug. 11.—Sun Pipe Line Co. has completed its gasoline pipe line from Marcus Hook to the Syracuse, N. Y., terminal on the New York State Barge Canal. The line is being tested this week and will go into service about August 15.

Chicago Area Expects 4 Cent Gasoline

Indications Are That Price Will Prevail This Week. Product Scarce. Natural Gasoline Advances Strongly

By Robert C. Conine
Chicago Bureau, The Oil and Gas Journal, 6 North Michigan Ave.

CHICAGO, Aug. 10.—As the tank car gasoline markets in the Chicago district last week were moving up in jumps of an eighth of a cent every other day, the extreme nervousness which has been marking the trade's oil activities gave way to jubilation in some quarters and deepest anxiety and gloom in other camps. With U. S. Motor gasoline selling at 3½ cents to 3¾ cents at the close of business Saturday, and the conviction strong in oil trade circles that this week will see the arrival of 4-cent gasoline, the jobbers Saturday were busily sounding the possibilities of a general tank wagon and service station price advance. In fact, it appears to be a foregone conclusion that such an advance is imperative to keep a large number of jobbers and some distributors from going on the rocks.

The greatest price advance noted was in the natural gasoline markets. Some buyers with blending naphtha on hand have in a number of cases been forced to pay more for a stabilized absorption of 96 per cent recovery and 18 pounds Reid vapor pressure, than for U. S. Motor gasoline. One distributor considered that he had made a fine buy Saturday when he bought five cars of this material at 4 cents, and felt certain that he could place two of the cars for 4¼ cents to a buyer who has been considered a leading bargain hunter.

A heavy blow has been dealt to the scale of jobber-blended gasoline in Illinois by the regulation which calls for displaying a sign on such motor fuel pumps classifying the product as second grade fuel. The naphtha which would blend to Navy specifications is beyond reach in price to those sellers who are depending upon this class of motor fuel to carry on the price competition battle. The 50-52 gravity, 450 endpoint naphtha, has moved up a quarter of a cent to a low of 3 cents and a high of 3½ cents. The 56-58, 450 endpoint naphtha shows a narrower range of 3⅛ cents to 3½ cents. It is indicated that most of the natural gasoline being bought, one of the major companies figuring as one of the largest buyers, is going to distributors and jobbers who already have a large supply of naphtha on hand. However, on the open market, the quantities of natural gasoline and naphtha available are said to be small.

Gasoline Scarcity

At the Chicago offices of two major refiners who operate plants within the "crude oil war zones" of Kansas and Oklahoma, it was said Saturday that a crude oil shortage appears imminent at these refineries. Another major interest with plants in Oklahoma felt no anxiety about the probability of an extended crude production shutdown because it is believed that the quantity of crude held in storage at the Oklahoma refineries will be sufficient to tide the plants over the present conditions. However, the evidence available in Chicago points to a withdrawal from the markets of most of the Oklahoma refiners. It is believed that a crude oil shortage is being felt at certain refineries operating at Wood River, Ill.

Several refiners have been making inquiries in Chicago on 100 and 200-car orders, but they have been unwilling to buy at the 3¾-cent price generally quoted. The practical certainty that U. S. Motor will go to 4 cents this week, however, is expected to induce these large buyers to place their orders without much further delay.

Temporary Security Assured

Several important distributors in the Chicago district said Saturday that they felt that they could speculate on gasoline prices over the remainder of August with comparative safety. The principal reason for this attitude, according to these distributors, is the fact that gasoline stocks have been run down to such a low level, and the physical considerations attending the resumption of refinery operations by those now troubled by crude oil shortage is such that what ever turn takes place in the general crude oil situation the effects cannot be transmitted to the refined products markets within a time sufficiently short to pinch the seller who has given a flat price over the remainder of the month.

Majors Moving Cautiously

The major refiners, however, are manifesting a strong aversion to gambling on the markets. One such refiner whose custom it has been to offer a flat price on gasoline delivered over a three months' period, has restricted flat price offers to cover only 30-day periods. Another major now refuses to quote flat prices over any length of time. Refiners are reporting that they are far behind on their shipping instructions while their jobbers are taking their full contract commitments. Where the refiner is willing to offer a flat price over the period August 10 to September 10, the price is at least 4 cents, and there is a noticeable lack of interest in the larger orders.

Eagerness in the district to buy gasoline, and the fact that no considerable quantities are readily available, is indicated in the fact that one distributor was able to dispose of four cars of material which was below U. S. Motor specifications at 3½ cents.

Tank Car Gasoline

At the close of business Saturday ruling prices on the U. S. Motor specifications material (58-60, 437 endpoint) was 3½ cents to 3¾ cents, with most of the gasoline moving at the 3¾-cent price. A few distributors gave notice on the same day that their spot market price was practically certain to go to 3⅞ cents and 4 cents on this material when they opened for business Monday. One distributor was so sure of the advance this week that he said he was willing to give his jobbers a guarantee to that effect.

Price advances were also seen in the higher tests. The 60-62 gravity, 400 endpoint gasoline moved up from 3¼ cents to 3½ cents to a new range of 3⅝ cents to 3⅞ cents, with a few scattered orders reported at 4 cents. The 64-66 gravity, 375 endpoint gasoline advanced from 3⅝ cents to 3⅝ cents to a new range of 3¾ cents to 4 cents, with a few sales of 4⅛ cents reported. The 64-66, 437 endpoint blended gasoline advanced from 2¾ cents and 3 cents to 3 cents low and 3⅛ cents high. Ruling prices on 68-70 gravity gasoline of 360 endpoint had moved up from 3½ cents and 3¾ cents to 3⅞ cents and 4⅛ cents.

Contract Agreements

While competition waxed furiously in the wake of expanding marketing facilities, the measures in most cases timidly advanced by certain refiners to obtain protection on their marginal guarantees in the event of a crude oil debacle were generally considered unduly conducive to "sales resistance" and a large number of agreements between refiner and buyer were drawn up without a stop price clause of any description. Some refiners who left themselves unprotected on comparatively long-term contracts have been able to save themselves in the present crisis by referring their buyers to the fable of the gold egg laying goose which was so profitable during life and just ordinary goose after death, with the result that new agreements were substituted for the old contracts.

Another refiner, sensing that gasoline markets might conceivably break, entered a clause in his contract that at no time would gasoline be delivered at less than 2.5 cents Group 3. A margin of 6.25 cents below Red Crown service station prices was allowed. The price stop clause saved this refiner from selling his gasoline at 1.85 cents.

Among stop price clauses now being added to protect the refiner on his marginal guarantee are the following: For each 5 cents change in the price of crude oil one-tenth of a cent is to be added or deducted, as the case may be, on the gasoline price in the spread contract; no gasoline will be delivered at a price below double the cost of the crude oil on the date upon which the contract is made; no gasoline will be delivered below a stipulated low. The buyer has the alternative of buying from the refiner at the spot market price.

Cut Price Dealers

If conditions in the gasoline markets continue over the next two weeks it is the opinion in oil trade circles in Chicago that a large number of trackage station operators will be forced to close their places of business. It is understood that the major companies do not believe the time proper for raising the price of their third grade gasoline although scores of cut price operators are known to be anxious to be given an opportunity to raise their service station prices from 1 to 2 cents.

One distributor reports that certain independents are attempting to carry out a scheme for evading the 3-cent gasoline tax. These operators are said to be led by a former state oil inspector and the plan is to establish a number of dummy cleaning establishments. Naphtha will be billed to the fake cleaners and poured into U. S. Motor gasoline in a proportion of 4 cars of naphtha to 10 cars of gasoline. The problem is to find a refiner who will bill a suitable naphtha as "cleaners naphtha."

What appears to be the beginning of a gigantic expose of gasoline bootlegging in Chicago broke into the newspapers last week, the Chicago Daily News taking the lead. This newspaper points out that a drive nearly a year ago against gasoline bootleggers brought about the indictment of about 40 distributors and employes by a grand jury on charges of conspiracy and defrauding the State of hundreds of thousands of dollars in gasoline tax fees. Six men were indicted for perjury. Of the men indicted only two were tried and were acquitted. Two state oil inspectors lost their jobs and it was revealed that a number of the remaining inspectors were unable to distinguish 41-43 gravity kerosene from 68-70, 360 endpoint gasoline, and in fact had never seen a tank car of oil before they were given their posts.

Fight Against Bootleggers

Although honest and efficient oil inspectors, the state authorities say, have been slugged and threatened with the well-known one-way ride, the State is preparing to wage a war to a finish against the organized gasoline bootlegging ring in Chicago. According to the state attorney's office these tax evaders will stop at nothing to obtain what they want and a recommendation is being made by this office to have an assistant district attorney placed in the city with no duties except to clean up the gasoline bootlegging activities.

Natural Gasoline Prices

Sellers in the Chicago district Saturday had advanced their natural gasoline prices in some instances as much as a cent above last week's quotations. A stabilized material of 96 per cent recovery and 18 pounds Reid vapor pressure was selling at 4¼ cents. Grade A, 72-79.9 gravity, of 375 endpoint and 90 per cent recovery was 4 to 4¼ cents; Grade AA, 80-87.9 gravity, of 375 endpoint and 90 per cent recovery was 3½ to 3¾ cents, and Grade BB, 84-92 gravity, of 375 endpoint and 85 per cent recovery was 3½ cents.

Kerosene

Kerosene continued dull last week and prices easy at 2 to 2⅛ cents for the 41-43 water white material, and 2⅛ to 2¼ cents for the 42-44 water white kerosene.

Lubricating Oils

The long expected revival in Mid-Continent bright stocks and neutrals made its appearance in the district last week when several important sellers advanced their prices on an average of 3 cents. In the bright stocks 1 color (Tag-Rob) went up to 15 cents; 1¼ color moved up to 17 cents, and 1½ color to 19 cents. At the same time Pennsylvania bright stocks were being quoted at from 25½ to 27 cents. Mid-Continent red motor and tractor blends were up as follows: 300, 10½ cents; 500, 11¾ cents, and 600, 12½ cents. The 95 at 210° was 14 cents, while the 120 at 210° moved to 15¼ cents.

Fuel Oils and Gas Oils

Refiners are extending their policy of quoting flat prices on short periods only to the fuel and gas oil markets. In view of the tank wagon prices quoted in the contracts of major companies it will be necessary for distributors to make contracts at prices for winter delivery which are close to current prices. Much of the fuel and gas oils being produced at the larger refineries, it is reported, is going to the cracking units. An interesting fact brought out last week was that of a major refiner who refused to sell 28-30 zero fuel oil to distributor except for delivery from the refinery to ultimate consumer. This refiner said that he was not disposed to sell fuel oil which may be run into cracking units of a competitor.

Last week Pennsylvania Oil Co. of Evanston was given the contract to supply the Chicago Board of Education with 155,000 gallons of 18-22 fuel oil over the period of September 1, to January 1, at 4 cents a gallon. Other bids for this business were: Standard Oil Co. of Indiana, 4½ cents; North Shore Petroleum Co., 4¾ cents; Continental Oil Co., 4¾ cents with three-quarters-cent discount 10 days; Consumers Co., 4¾ cents with one-half-cent discount 10 days; Apex Motor Fuel Co., 4¾ cents; Jewett and Sowers, 4¾ cents; Seneca Petroleum Co., 4¾ cents, and Deep Rock Oil Corp., 4¾ cents.

Fuel and gas oil tank car prices at the close of business Saturday gave little or no indication of the firming process said to be at work in these markets. An advance was seen in the zero 28-30 fuel oil, and the extremely cheap 18-22 material appears to have been got out of the way. Spot market quotations Saturday were: 18-22 fuel oil, per barrel, 20 to 25 cents; 22-26 fuel oil, per barrel, 25 to 30 cents; 28-30 fuel oil (zero) per barrel, 37½ to 42½ cents; 32-36 industrial gas oil, unchanged at five-eighths to seven-eighths cent; 32-36 zero gas oil, 1 to 1¼ cents; 38-40 straw distillate, 1⅛ to 1⅜ cents.

Eastern Market Is Watching Oklahoma

Effect of Shutdown on Refined Oil Situation Being Studied. Bunker C and Diesel Oil at Low Price Levels

By A. E. Mockler

New York Bureau, The Oil and Gas Journal, Rooms 1919-21, No. 154 Nassau Street

NEW YORK, Aug. 10.—Two successive declines in bunker "C" and Diesel oil prices featured the refined oil market last week, carrying prices for both products down to record low levels. Changes of outstanding importance were lacking in the remainder of the refined products market, with the trade marking time pending further developments in the crude oil situation. Weakness in fuel and Diesel oils is attributed mainly to foreign competition.

The Oklahoma production situation was the center of interest in trade circles this week, with considerable speculation among oil men as to the probable results of the drastic shutdown order issued and made effective by the Oklahoma governor. Consummation of the East Texas proration campaign, in conjunction with the arbitrary cutting of Oklahoma production, it is felt, may radically change the entire crude oil picture, and consequently the refined products situation, and under the circumstances the trade is naturally holding off pending a clarification of the situation.

Gasoline gallonage in East Coast markets continues to hold up in satisfactory volume, and the market is slowly stiffening under the impetus of increasing consumption and smaller stocks. Gasoline holdings of East Coast refiners as of August 1 were 6,103,000 bbls., as compared with 6,489,000 bbls. on hand at the close of the previous week, and further curtailment of surplus holdings is looked for.

Eastern refiners are steadily improving the quality of their gasoline and lub oil products, and changes of outstanding importance in refining methods by some units is expected to force a general revision in operating procedure on the part of eastern refineries. The demand for high octane gasoline, in particular, has brought many important changes in refinery equipment in some plants, and other refiners, who have not yet brought their refinery facilities more closely up to date, will be compelled to follow the lead of plants already modernized for the production of high octane motor fuel.

Refinery Gasoline

Recent improvement in the refinery gasoline market has been fairly well sustained, although a little price cutting has again cropped up in some quarters of the trade. The range of posted prices in the New York harbor area remains unchanged at 5¼ to 6 cents per gallon for U. S. Motor in tank car lots, f.o.b. refinery terminals, although some business has been put through on the spot position during the week at 5 cents.

While East Coast interests are generally firm at a minimum of 5¼ cents at terminals, cheap East Texas gasoline is still a factor in the local situation, and leading sellers are being compelled to dip under their posted prices in some instances to meet competition from this so-called "outside" gasoline. It is not expected that any general increase in posted prices in the eastern tank car market will be attempted until the East Texas situation is cleared up to the point where continued offerings of gasoline from this area at extremely low prices become less frequent. East Texas gasoline sellers are already showing firmer price views, but it is understood that considerable gasoline from that area will move into East Coast markets throughout August on contracts booked some time ago.

Although New York has had its share of price competition in the tank car market during recent weeks, Philadelphia has been a hotbed of competition of this sort, and the price basis in the refinery gasoline market at that point is considerably disturbed.

California gasoline is not moving eastward in a large way at the moment, and sellers of the California product on the spot market are posting a price of 6 cents per gallon, in tank car lots.

Tank Wagon Gasoline

There has been no change in the tank wagon and service station gasoline situation during the week, and posted prices remain unaltered. Volume has continued to run into heavy totals, the record hot spell experienced in many sections of the territory having made for a considerable increase in motoring, with a resultant gain in motor fuel consumption.

Improvement in the refinery gasoline situation has not yet been reflected in the retail markets, and the price structure continues greatly disturbed. Seven gallons for $1, tax paid, is still the prevalent price for leading brands at many points in New York City territory, with one prominent brand available at 8 gallons for $1 at retail. An independent retailer marketing the latter brand, when queried as to how long he could continue to sell at that price, declared that he would be able to maintain the 8 gallons for $1 quotation for many months to come, on the strength of a term contract with the marketer.

From the above, it is evident that marketers are still placing long-term contracts with independent retailers whereby concessions are made in exchange for exclusive distribution of gasoline. Some of the larger units have entered into term contracts with fairly large chains of independently owned stations, whereby the chains, in effect, act as direct and exclusive selling agents for the refiner, with a fixed margin on all products handled. This practice, in conjunction with the steady building up of directly owned company retail stations, is expected to be an important factor in restoring more normal conditions in eastern marketing operations.

Notwithstanding the price cuts on leading brands of straight motor fuel, marketers in most instances continue to maintain former differentials on their premium grades.

Kerosene

Trading in kerosene in the refinery market continues rather slack with refiners continuing to post 4¾ cents per gallon for 41-43 water white in tank car lots, f.o.b. refinery terminals.

Tank wagon business is likewise quiet along routine lines, with posted prices quotably unchanged at all points in the territory.

Fuel Oil

Two successive cuts in posted prices for bunker "C" fuel oil, amounting in each instance to 5 cents per barrel, announced by leading refiners during the week just ended, have put the local market at 70 cents per barrel, the lowest price level in the recorded history of the industry. The first reduction, announced early in the week, applied at all East Coast and Gulf Coast ports, the second only at Atlantic Coast ports and New Orleans, Baton Rouge and Westwego on the Gulf.

The latest reductions were entirely unexpected, and came at a time when many in the industry were seriously considering the possibility of a higher fuel oil price, based on the stronger crude oil market.

Both bunker "C" and Diesel oils, during recent months, have been taken out of their customary categories, and their price movement has been dictated not so much by competitive conditions in the domestic markets as by changes in the foreign situation. Just as "local competition" is responsible for most of the price readjustments in domestic gasoline markets, so has "foreign competition" loomed to the forefront recently as the dominating factor in the bunker oil market.

Rumania, rather than Russia, has been the chief factor in the recent weakening in bunker and Diesel oil markets, refiners declare. Most of the large transatlantic vessel operators hold annual contracts for their bunkering requirements for vessels plying between American Atlantic ports and Europe. These contracts usually do not specify actual quantities, but cover the line's requirements. With Rumanian oil available at extremely low prices in many European ports during recent months, a considerable part of the foreign marine bunkering business has been jeopardized, with foreign sellers steadily cutting into the business of American marketers, and refiners here have been compelled to readjust selling prices to present record low levels in order to hold on to their regular contract outlets. Notwithstanding reports indicating that the Rumanian production situation was about to be brought under control, with a resultant upward movement in prices, eastern refiners who are vitally interested in Rumanian competition declare that thus far there have been no definite indications of a lessening in Rumanian competition, and the outlook, therefore, remains quite complex. Russia has also loomed more strongly to the front as a competitor in some European ports, but Soviet competition, from the price standpoint, has not been as drastic as has been the case with Rumanian oil.

Diesel Oil

The Diesel oil market recorded another all-time low during the week when posted prices were twice reduced 5 cents per barrel, making a net reduction of 10 cents (to $1.40 per barrel) at Atlantic ports, a similar decline at Louisiana Gulf ports, and a single 5-cent drop at Texas Gulf ports, only one of the reductions taking in Texas. The current price of $1.40 at New York is for oil in bulk, f.o.b. terminals, with the usual charge for bunkering alongside within the harbor limits.

While Rumanian and Russian competition has cut materially into Diesel oil sales to some transatlantic vessel operators, there are many Diesel-powered vessels plying out of New York and other American Atlantic Coast ports which are not affected by the foreign situation. Many of these vessels run to ports where the Rumanian and Russian oil, because of freight differentials and other considerations, are not factors. A number of new Diesel-powered vessels have come into service thus far in 1931, with more expected before the end of the year, and this "new" consumption is more than balancing the gallonage lost abroad in the case of many sellers, it is stated.

In addition to this encouraging situation in the marine end of the business, domestic Diesel oil markets are yielding a steadily increasing gallonage, and sales development work by refiners in the domestic field is showing favorable results. While refiners are hesitant in predicting the future course of Diesel oil prices, in view of the foreign situation, many interests believe that bottom has been reached, and that the future course of the market will be upward.

Lubs

There has been a good buying movement on cylinder stocks during the week, but the market is not yet fully stabilized, and refiners' quotations show considerable variance. Locally, the market holds unchanged at the substantial advances recorded last week, but it is said that the new prices can be shaded slightly in some directions. Traders, however, expect the market to gradually firm up to quoted levels, and are unwilling to book spot business under the levels quoted.

Industrial demand for red and pale oils is at the low ebb for the year, in many instances, due to seasonal shutdowns for plant overhauling in some industries. Refiners do not expect any appreciable pick-up in domestic demand until about the middle of September. More export inquiry for industrial oils has developed, however.

Gas Oil

Seasonal quiet continues in the gas oil market. Refiners continue to post 4 cents per gallon for 28 plus recycled oil in tank car lots, f.o.b. refinery terminals, but this price can be shaded b one-quarter cent in some directions.

Gas manufacturing companies are taking gas oil as required, but are not filling storage for later consumption, as was formerly the custom during the summer months. This indicates a rather bearish viewpoint on the future of gas oil prices on the part of these large consumers.

Wax

Inquiry for prompt and nearby shipments showed some improvement during the week, and the market remained in steady position at the advances scored during the previous week. Export inquiry was also a little better, and traders were looking for a broader movement in the near future.

The statistical position of the wax market has shown some improvement. June domestic demand totaled 22,245,000 pounds, against 18,950,000 pounds in the previous month, and exports were up to 20,391,000 pounds from the 17,586,000 pounds shipped abroad in the previous month. Stocks were also off, at 200,836,000 pounds on June 30, against 205,803,000 pounds held at the close of the previous month and 249,748,000 pounds held by refiners on June 30, last year.

Petroleum Exports

There was some improvement in aggregate gallonage of petroleum exports through the local port during the week ended August 1, but no developments of outstanding importance on any of the major products. With crude oil steadily strengthening and the refined products division of the market still unsettled, foreign buyers were still uncertain as to the market position and disinclined to operate in the spot market in any substantial volume.

The following table shows principal exports of refined petroleum products from New York for the past three weeks (all figures in gallons unless otherwise noted):

	Week ended		
	Aug. 1	July 25	July 18
Gasoline	76,000	.....	350,000
Naphtha	450,000	20,000	3,675,000
Kerosene	40,000	5,000	350,000
Fuel oil	8,000	150,000	275,000
Lubricating oil	1,625,000	1,360,000	975,000
Petroleum, ref.	430,000	40,000	1,295,000
	Pounds		
Petrolatum	35,000	80,000	.....
Paraffin wax	2,415,000	1,275,000	1,450,000
Refined	50,000	.....	.....
Scale	360,000	240,000	135,000
Lubricating grease	1,090,000	640,000	750,000

Eastern export sellers operating in South American markets report continued sharp competition from Soviet gasoline, kerosene and other products, notably in East Coast markets of South America, and it is expected that this competition will become keener as the Soviet organization further integrates its marketing operations in South America.

Export Market

The export situation was somewhat complicated last week by the reported closing of five cargoes of gasoline, running between 8,000 and 10,000 tons each,

for August 15-September 15 shipment for France. One of the large integrated companies was reported to have taken the business, and, while the prices were not announced, it was reported that the average selling price was one-quarter cent per gallon under recently established quotations. This development has tended to create an unsettled feeling at the Gulf, and additional business is being deferred pending a clarification of the price situation.

No trading in either Venezuelan or Mexican crude was reported during the past week, quotations remaining unchanged on both oils.

The California export market was likewise reported quiet during the week.

Imports

Imports of crude and refined petroleum at the principal United States ports for the week ended August 1 totaled 1,197,000 bbls., a daily average of 171,000 bbls., compared with 1,623,000 bbls., or 231,857 bbls. daily during the previous week and a daily average of 213,071 bbls. for the four weeks ended August 1. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast ports—	
Baltimore	146,000
New York	693,000
Philadelphia	224,000
Others	72,000
Total	1,135,000
Daily average	162,143
At Gulf Coast ports—	
New Orleans and Baton rouge	62,000
Total	62,000
Daily average	8,857
At Atlantic and Gulf Coast ports—	
Total	1,197,000
Daily average	171,000
Daily average four weeks	213,071

Distribution of total imports is as follows:

Crude	881,000
Gas oil	101,000
Fuel oil	215,000

The shutdown of a large proportion of the Oklahoma producing wells early last week aroused considerable interest in oil circles here, because of its possible effect upon crude oil imports. The several large integrated companies with large producing properties in South America are in advantageous position for a continued adequate supply of crude in the event that the so-called "producers' strike" in some of the domestic producing fields should spread. No immediate speeding up of import movement of crude is looked for, however, and it is probable that, barring unforeseen developments, importing companies will continue to restrict their imports of both crude and products in line with corresponding curtailment measures on the part of the industry in the United States.

California Oil Receipts

Receipts of California crude and refined petroleum at Atlantic and Gulf Coast ports for the week ended August 1 totaled 537,000 bbls., a daily average of 76,714 bbls., compared with 97,000 bbls., a daily average of 13,857 bbls. during the previous week and a daily average of 54,107 bbls. for the four weeks ended August 1. Details follow:

	Bbls. of 42 gals.
At Atlantic Coast ports—	
Boston	37,000
New York	265,000
Philadelphia	117,000
Others	118,000
Total	537,000
Daily average	76,714
At Gulf Coast ports—	
All ports	None
At Atlantic and Gulf Coast ports—	
Total	537,000
Daily average	76,714
Daily average four weeks	54,107

Distribution of total California oil receipts is as follows:

Gasoline	530,000
Kerosene	7,000

The action of Richfield Oil Corp. of New York in closing a contract with Arkansas Natural Gas Co. for 75 per cent of its requirements of gasoline and other products is expected to be reflected substantially in California gasoline shipments eastward. Heretofore, the New York Richfield company has been obtaining virtually all of its gasoline requirements from the parent California Richfield company, and these shipments have been responsible for a considerable percentage of the total California gasoline movement eastward. The contract for the supply of the Arkansas product to the eastern Richfield company is now in effect.

Charter Market

Quiet markets were reported during the few weeks, and few actual tanker bookings were reported. The coastal and intercoastal markets remained dull, and Gulf-transatlantic business did not develop along the lines some had looked for.

Fixtures reported during the week were as follows:

Motorship Athel (British), 9,000 tons, crude, Gulf to the continent, 9/- option Cartagena to Antwerp, 8/-, August.

Motorship Strix (Norwegian), 8,000 tons, clean, Gulf to Dunkirk and Rouen, 9/2, option North Atlantic loading, 7/10½, Constanxa 7/3, or Black Sea 7/6, August 25-September 5.

Steamer Ramona (Italian), 4,900 tons, gas oil, Constanza to Rotterdam, 7/9, August.

Steamer Riva Sarda (Italian), 1,368 net, clean, two, four or eight consecutive voyages, Black Sea to French Mediterranean, 9/3, with options, October.

Steamer Literno (Italian), 3,640 net, clean, Constanza to French Atlantic, 6/9, with options, September.

Steamer....., Constanza to Alexandria, and/or Piraetus, 4/9, 5/3, both ports, September.

Motorship Luxor (British), 9,000 tons, clean, Batum, Novorossisk or Tuapse to United Kingdom-continent, including Ireland, 7s, August 20-31, cancelling.

Motorship Svolder (Norwegian), 9,000 tons, clean, Batum, Novorossisk or Tuapse to United Kingdom-continent, including Ireland, 7s, August 20-31, cancelling.

In addition to the above the motorship Siljestad (Norwegian) of 5,000 tons was fixed for asphalt, Tampico to Penang, Port Swettenham, Singapore, 22/-x one, 22/9 two and 23/6 three ports discharge, August 10-20.

SHUTDOWN DECREASES OUTPUT 500,000 GALLONS

(Continued from Page 122)

Co. was reduced from 22,000 to 4,500 gallons daily. The output of the Carter Oil Co. dropped from 140,000 to 70,000 gallons daily as soon as the shutdown order was made effective. The normal output of 70,000 gallons daily of the Empire Oil & Refining Co. also declined approximately 50 per cent as did that of the Sinclair Oil & Gas Co. which previously had been producing from 130,000 to 150,000 gallons daily. Other manufacturers in the several Seminole fields with decreases from 25 to 75 per cent include Amerada Petroleum Corp., Barnsdall Oil Co., Crosbie & Moran, Gypsy Oil Co., Magnolia Petroleum Co., Phillips Petroleum Co., Pure Oil Co., M. F. Powers, Shell Petroleum Corp. and the Victor Gasoline Co. The survey made indicated that the production of all these plants did not exceed 225,000 gallons daily in contrast to a normal output of 550,000 gallons daily.

The casinghead gas available in the Greater Seminole area is coming from the wells with a production under 25 bbls. daily which are classed as stripper wells and wells which are showing considerable water which are also exempted from the shutdown order. On some leases all of the casinghead gas is coming from leases of this type and plants connected to these leases are getting their normal gas supplies. It is predicted, however, that many wells now being allowed to produce will be shut down this week after the State has had an opportunity to complete its investigations.

MOTOR FUEL SHOWS TREND TO HIGH VAPOR PRESSURE

(Continued from Page 122)

station pumps, so as to reduce the loss of volatile material which might result in a low value for the vapor pressure of the sample. As in the case of the twenty-second survey, the vapor pressure determinations were the first to be made on the samples. Determinations of vapor pressure were made in duplicate, and the results reported are the average of two determinations that did not differ by more than 0.2 pound per square inch.

The results of the Reid vapor pressure test given in this report are on the whole appreciably higher than those in Report of Investigations 3,063. Vapor pressures in the twenty-third survey range from 4.1 pounds per square inch for Sample 238, to 13.5 pounds for Samples 91 and 104 (Table 4). The average of the 207 samples of "competitive price gasoline" is 9.1 pounds per square inch, as compared with the average of 7.2 pounds for the 194 "competitive price gasolines" in the twenty-second survey. The average for the 105 samples of "premium price motor fuels" is 8.5 pounds per square inch, compared with the average of 7.0 pounds for the 104 "premium price fuels" in the previous survey. This increase in average vapor pressure and the increase in the upper limit of the range of vapor pressures from 10.0 pounds to 13.5 pounds per square inch is probably the result of a seasonal variation. However, because of the generally higher atmospheric temperature in August than in March, part of this increase may be due to the condition of the samples at the time they reached the laboratory where the determinations were made. In this survey of winter fuels the losses of light constituents in transit from service station pump to laboratory apparatus may not have been as great as in the previous survey of summer fuels, and therefore the laboratory results of the winter survey should more nearly reflect the actual vapor pressures of the motor fuels at the service station pumps than in the summer survey.

An examination of the totals given in Tables 5, 6 and 7 shows that the great majority of the samples have vapor pressures between the limits of 6.6 pounds and 11.5 pounds per square inch. For example, Table 5 shows that 90.7 per cent of all samples had vapor pressures between 6.6 pounds and 11.0 pounds per square inch. Table 6 shows that 95.1 per cent of the "competitive price gasolines" had vapor pressures between 6.6 and 11.5 pounds per square inch. Table 7 shows that 82.8 per cent of the "premium price motor fuels" had vapor pressures between 7.1 pounds and 10.5 pounds per square inch.

GASOLINE MARKET IN GULF AREA IMPROVES

HOUSTON, Tex., Aug. 11.—A decidedly firm tone was felt in the gasoline market on the Gulf Coast at the opening of the week. The firmness also was reflected to some extent in the pale and red oil market and also slightly in gas oils. Fuels were the only weak point, these products on the Gulf Coast reflecting the softness which has prevailed on the Atlantic Seaboard. The strengthening of gasolines so far has been largely due to expectant rather than actual business as well as reflecting the stronger market prices in North Texas and other Mid-Continent areas. Some increased demand has been noted within the past several weeks but the volume of sales has settled and it is probable that the bulk of new business has been done below present prevailing quotations. However, sellers apparently are in fair shape locally and are in a position to hold new market levels firmly for the time being, especially in view of the generally optimistic tone prevailing.

The probability that Oklahoma refiners with limited crude supplies as a result of the shut down of fields in that State will be forced into the market to cover their requirements has been encouraging to refiners in this area. While it is not likely that those refiners will actually buy out of this territory, any purchasing out of East Texas or North Texas naturally will be reflected here in the elimination of that competition in this area.

Two reductions in succession in the bunker market the past week were important developments in the fuel situation.

CALIFORNIA CRUDE OIL PRICES

(Continued from Page 125)

UNION OIL CO. OF CALIFORNIA

Crude Oil Prices for Its Purchases at the Well for Crude produced in Strict Accordance With the Production Allocations Made by the California Statewide Curtailment Committee Effective 7 a.m., June 20, 1931

(All gravities above those quoted take highest price for that field)

Gravity °A.P.I.		Signal Hill	Alamitos Heights, Seal Beach	Huntington Beach	Athens, Rosecrans, Domingues	Torrance	Santa Fe Springs	Playa Del Rey*	E. Coyote, Richfield	Montebello	Santa Paula	Orcutt	Coalinga	Lost Hills	McKittrick, Kern River, Sunset-Midway, Elk Hills, Buena Vista Hills	Gravity °A.P.I.
11-13.9	....	....	....	....	....	....	....	....	....	....	....	....	....	....	$.50	11-13.9
14-14.9	....	$.65	$.65	$.65	....	$.65	....	....	$.65	$.65	$.65	$.55	$.55	$.55	.55	14-14.9
15-15.9	....	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	15-15.9
16-16.9	....	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	16-16.9
17-17.9	....	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	17-17.9
18-18.9	....	.65	.65	.65	....	.65	....	....	.65	.65	.65	.55	.55	.55	.55	18-18.9
19-19.9	....	.65	.65	.65	....	.65	....	$.65	.65	.65	.65	.55	.55	.55	.55	19-19.9
20-20.9	....	.65	.65	.65	....	.65	....	.65	.65	.65	.65	.56	.55	.55	.55	20-20.9
21-21.9	....	.65	.65	.65	....	.65	....	.66	.66	.65	.65	.57	.55	.57	.55	21-21.9
22-22.9	....	.65	.65	.65	....	.66	....	.67	.67	.65	.65	.59	.55	.59	.56	22-22.9
23-23.9	....	.67	.67	.67	....	.67	....	.68	.68	.65	.65	.61	.55	.60	.58	23-23.9
24-24.9	....	.69	.69	.69	$.69	.68	$.65	.69	.69	.65	.66	.63	.55	.63	.61	24-24.9
25-25.9	....	.71	.71	.71	.71	.70	.65	.70	.70	.65	.68	.65	.57	.64	.64	25-25.9
26-26.9	....	.73	.73	.73	.73	....	.65	....	.72	....	.70	.67	....	.66	.66	26-26.9
27-27.9	....	.75	.75	.75	.75	....	.68	....	.74	....	.72	....	....	.67	.63	27-27.9
28-28.9	....	.77	....	....	.77	....	.71	....	....	....	.74	....	....	.69	.71	28-28.9
29-29.9	....	.79	....	....	.79	....	.73	....	....	....	.76	....	....	.71	.74	29-29.9
30-30.9	....	.81	....	....	.81	....	.75	....	....	....	.78	....	....	.72	.76	30-30.9
31-31.9	....	....	....	....	.83	....	.78	....	....	....	....	....	....	....	....	31-31.9
32-32.9	....	....	....	....	.85	....	.80	....	....	....	....	....	....	....	....	32-32.9
33-33.9	....	....	....	....	.87	....	.83	....	....	....	....	....	....	....	....	33-33.9
34-34.9	....	....	....	....	.89	....	.85	....	....	....	....	....	....	....	....	34-34.9

*Subject to a gathering charge of 5 cents per barrel.

STATE SHOULD REQUIRE EFFICIENT METHODS

(Continued from Page 16)

ences to laws relating to drainage districts suggest that the legislature of a state might authorize the creation of oil and gas conservation districts, with power in the owners of leases upon lands within an oil field or an area which may be thought to be underlain by oil or gas, to organize such a district to be operated on the unit plan; all with the view to accomplishing two purposes—first, the prevention of the waste of oil and/or gas in the area for the general benefit of the public at large and to conserve it for use as and when needed by the public, and, second, to bring about a fair distribution of the content of the reservoir among the several land proprietors and to protect each against the extraction by any of a disproportionate part thereof.

In practice it would doubtless be almost universally true that the owners of leases upon a considerable portion of the acreage would agree to the unitization of their lands and would be in a position to vote or petition for the establishment of an oil conservation district to be operated with a view to accomplishing the purposes above enumerated, and thereby force into the plan those unwilling to join it. Having been established pursuant to legislative enactment, royalty owners would be likewise bound. The area of the pool might, and doubtless, in most instances, would be unknown at the beginning of development; but it could be approximated. A particular area could be originally brought into the plan with the understanding that as development progressed, its boundaries could be extended; and, if land brought in proved to be outside the pool, it could be later excluded. We find that in the case of drainage districts it is not an uncommon thing for lands which are brought in to be later excluded because found not to be benefited, and, also, that lands are often added or annexed to the districts which it is later discovered will be benefited by it. (Hauck v. Little River Drainage District, 239 U. S. 254, 60 L.ed. 266; 19 C.J. 621-622.)

Police Power

Is the saving to the producers in cost of recovery a meritorious consideration from a legal standpoint? The answer must be in the affirmative. The police power of the state is not limited to measures for the protection of the health, safety and comfort of its citizens. It extends also to the promotion of general prosperity, a fact referred to in strong terms by the California Supreme Court in the gas-oil ratio case (294 Pac. 717). The Idaho sheep-herding statute was sustained upon the ground that it promoted the prosperity and general welfare of the State and its inhabitants (Bacon v. Walker, 200 U. S. 561). In the City of Oxford case, the trial court, speaking through Judge McDermott, who later became a circuit judge in the newly created Tenth Circuit Court of Appeals, made a particular point here. He said:

"Without any attempt to define police power, it is sufficient so say that the police power is not limited to the protection of the health, peace and morals of the community. It has been said to extend to acts that 'increase the industries of the state, develop its resources, and add to its wealth and prosperity' (Barbier v. Connolly, 113 U. S. 27, 5 S. Ct. 357, 28 L.ed. 923), and to 'promote the public convenience and the general prosperity' (C. B. & V. Ry. v. People, 200 U. S. 561, 26 S. Ct. 341, 50 L.ed. 596, 4 Ann. Cas. 1175)."

Referring to zoning ordinances, and particularly to the ordinance involved in the case of Euclid v. Ambler Realty Co., 272 U. S. 365, Judge McDermott said that:

The ordinance was sustained on the broad ground that one can be compelled by law to use his own so as not to injure another.

Later, he said that:

The argument most generally used in support of zoning ordinances is that of the stabilization of property values, and giving some assurance to the public that, if property is purchased in a residential district, its value as such will be preserved, is probably the most cogent reason back of zoning ordinances. That reason exists in the case at bar. An ordinance which affords some protection to the public generally from the waste of town lot drilling, and gives some assurance to owners of real estate that the oil under their property may be economically recovered, is within the police power. An ordinance that makes it impossible for a diligent or fortunate lot owner to drain the oil from his neighbor's lots, to his own exclusive use; an ordinance which makes it impossible for an owner of property in a block to prevent any recovery of oil on other parts of the block—is valid.

We have the question as to whether the imposition by a legislature of such a regulation as we are discussing would constitute an unreasonable restraint. One limitation upon the police power is that the regulation must not be unreasonable or arbitrary; otherwise, the courts will strike it down as a taking of property. It therefore becomes necessary that we make sure of the soundness of our position from a fact standpoint. However, in the Ohio Oil Company case, that company was unable profitably to operate its oil wells unless it were allowed to produce at the same time the gas, and, it had no market for the gas. The court nevertheless sustained the law prohibiting a waste of the gas. The case of Walls v. Midland Carbon Co., 254 U. S. 300, 65 L.ed. 276, presents a still stronger case which those who are interested may desire to read. In the California case, the operation of a certain well was enjoyed until more efficient methods should be employed to conserve the gas (294 Pac. 717, 726).

In the Texas 150-foot rule case there was a limitation placed upon the otherwise existing right to drill as many wells as the lease owner desired, and, while the reasonableness of the order was not raised in the suit, yet the court took account of the area from which the lease owner would draw oil through its wells, and although it was not at all apparent that the particular number of wells allowed to be drilled, when considered in connection with the wells on adjoining lands, enabled each leaseholder in the particular area to extract from the reservoir his fair share based upon any sort of mathematical calculation, yet, the court dealt to no small extent with the reasonableness of the limitation of the Oxford Oil Company under the circumstances. Surely, if the Texas order, which so far failed of perfection, was not unreasonable or arbitrary, a regulation which more nearly approaches a distribution among the surface owners upon a basis which, by mathematical calculation, is approximately fair, could not be said to be unreasonable or arbitrary. The same thing may be said of the City of Oxford, Kans., case. But the point is that any enforced unit operation plan must not be unreasonable; otherwise, it will be void.

The police power, if exercised, can close the door to the desire of your neighbor to gain possession of your oil and gas deposits. It can remove from your neighbor his fear that you will gain possession of his. The police power, if exercised, can dispense with the prevailing wasteful cost of capturing these substances. It can dispense with the practice of skimming the cream off of flush fields and leaving the bulk of the deposits to be possessed only at such high cost that much that could have been obtained will never be recovered at all. It can, if it will, compel a cessation of the practice of committing underground waste. It can, if it will, adjust output to market demand and thus let the tankage of excess supplies rest where they should in nature's costless, wasteless and perfect warehouse. In times both of overproduction and underproduction, it can secure to lessees generally a realization of a fair ultimate profit on their estates, and to lessors generally a more protracted and satisfying reasonable income, while insuring the public at large a greater certainty of continuity of supply to meet its daily needs over an extended period of time, and thus promote the happiness, comfort and prosperity of the people.

SALT WATER DISPOSAL IS COSTLY PROBLEM

(Continued from Page 24)

tried on these blocks, although it would not work successfully if outside producers do not abide by cutting down production of their wells, thereby maintaining pressure.

Another plan for holding back salt water encroachment is to repressure by air or gas down slope to drive the water back into the formations. This plan has not been given much consideration.

Shutting in wells after water appears may result in subsidence of water content for a short period, but this would be difficult in the face of so many small operators holding small leases and desiring to produce these leases to obtain ready cash, consequently this plan is not feasible.

Skimming in pumping wells by suspending the pumping equipment at the fluid surface and only taking off small quantities of oil may be successful in some instances, but failed in the Powell and Mexia Fields, and is not considered as a good plan for this district.

Plugging Back

Plugging back producers making water succeeds in temporarily retarding water encroachment, particularly where coning is in evidence, and several wells in the Kilgore Pool are now producing but little water after they were plugged back a considerable distance to shut off the water. Magnolia Petroleum Co.'s No. 1 Florey and Burton Drilling Co.'s No. 1 Florey, and Gulf Production Co.'s No. 1 Birdsong, all on the western side of this pool, have been plugged back, not altogether successfully, but cutting down the amount of water, and when wells are pinched in, but a small percentage of their former water flow is made with the oil. These were the first to make water in the field, and are now believed to be flooding the field around them.

Evaporation of the water in the district is not possible, due to the fact that a plant costing approximately $2,750 would evaporate only about 1,000 bbls. per day, and it would cost around $800 per month for the evaporation of such a small amount of water. Evaporation into the air, using large pits, is impossible due to reasons given above.

Salt Water Menace

Water encroachment has not yet taken on major proportions due to the vast amount of acreage which has remained undrilled, but wells on the western side which have shown a little water when completed, or developed water shortly thereafter, are increasing in the amount of water they are producing, unless the wells are pinched in, thereby proving that salt water will become the greatest menace to the field, and that its disposal will be the biggest problem confronting the operators. The general opinion is that salt water production would be limited by cost of disposal, as has been found true in other fields, but as this field has been operated and produced so unlike any other fields yet discovered, this opinion may not hold true for this district. However, if an operator in producing several thousand barrels of salt water per day with his oil, and has means for disposal of but a limited amount of such water, he will have to pinch in his wells to handle the situation.

The committee which has been investigating the salt water situation has submitted its report to a committee of practical operators. A salt water company will have to be organized for the district, and at the present time five lawyers have been appointed to collect ideas and suggest the best methods and plans for the forming of such a company. Such plans will be submitted to all operators, and a meeting will be held for the formation of the general organization.

O. E. Young of the Humble Oil & Refining Co. is chairman of the engineering committee which is devoting its time to the study of the salt water situation. Don Gladney of the Magnolia Petroleum Co. is chairman of the committee which is taking plans under advisement for salt water disposal.

Water-Oil Ratio

Some of the figures given on the water-oil ratio reported some of the fields as making 25 bbls. of water to 1 bbl. of oil. Fields in constant proration have been reported making only one-half barrel of water to 1 bbl. of oil. The general average of water to oil is 10 bbls. of water to 1 bbl. of oil.

Wells on the western edge of the producing area which will undoubtedly react upon the rest, or at least sections of the producing area follow: Stanolind Oil & Gas Co. and Weaver's No. 1 Everette in the Goodwin Survey, north of Gladewater in Upshur County, which is making considerable water, the first to make water in this area. Sinclair Oil & Gas Co.'s three Cole wells and Magnolia Petroleum Co.'s No. 1 Cole in the Sam Brooks Survey are western edge wells in Gregg County making different percentages of water. E. L. Chapman's No. 1 Russell in the English Survey, Rusk County, is making water, as is East Texas Refining Co.'s Co.'s No. 1 Tyiska in the Wilson Survey, Smith County. Sinclair Oil & Gas Co.'s No. 1 Jarvis and No. 1 Mayfield in the southwestern part of the Joiner Field, Smith County, are making water, but pinched in showing but small amounts. Other wells between these and the main bodies of the fields may be expected to show water, according to the depths to which they have been drilled, and according to the withdrawal of the oil from them. The water table is set at from 3,310-20 feet, and many wells throughout the western side of the producing area have been drilled near this water table, thereby affording danger to these and nearby producers.

The Kilgore Pool, Rusk County, has the greatest number of wells making water, there now being 18 which have shown larger amounts of water, but many others which have shown smaller percentages on

shake-up tests. One report stated that over 130 wells in the district have shown various percentages of water, and with curtailment of production thrown to the winds and the wells flowing wide open, many of these, as well as offset wells, may be expected to show water from time to time.

Wells which have caught fire as they were completed, flowing wide open and burning for many days, one of them burning over 26 days, consuming at the rate of from 15,000 to 18,000 bbls. of oil per day, have all added to the dangers of salt water coning and encroachment, consequently wide open flowing of wells and inefficient production methods are adding to the approaching necessity of some form of salt water disposal.

OKLAHOMA SHUTDOWN HAS LITTLE EFFECT

(Continued from Page 13)

above has been completed, withdrawals from storage in Oklahoma and Kansas will average about 175,000 bbls. daily. Stocks of pipe line companies in Oklahoma and Kansas total about 110,000,000 bbls.

It has been contended for a long time crude oil and gasoline stocks have been excessive and these stocks should be reduced very materially. With the exception of a very few small refineries in Oklahoma, refiners in that State have ample stocks of crude oil for their requirements over a long period. It would take nearly two years to deplete the pipe line companies' storage in Oklahoma and Kansas with withdrawals of 175,000 bbls. daily.

Many are of the opinion companies with large quantities of crude oil in storage feel the present time is propitious for a reduction of these stocks. The cost of carrying crude oil in storage is high and with plenty of production in sight for a long time to come, there is no urgent reason for carrying excessive stocks of crude aboveground.

All of these factors may account for the lack of resistance, legal and otherwise, which characterized the enforcement of Governor Murray's order shutting down wells in 29 prorated fields in Oklahoma last week. The producing companies complied immediately with the order to close in their wells in all fields and have made no attempt to open these wells and have made no statements indiciating they intend to try to open the wells or to resort to legal action to obtain relief from the shutdown order.

Just how long the governor's shutdown order will be effective is problematical. The petroleum industry of Oklahoma does not seem to be the least worried or troubled by the shut down and, from statements made, the order can be enforced indefinitely as far as the majority of companies in the State are concerned.

This situation and condition, however, all depends on what is done in Texas and Kansas. Any curtailment of production in those two States naturally will change the entire situation overnight. Governor Ross S. Sterling of Texas seems disappointed with the results, rather lack of results, obtained from the special session of the legislature of that State and he may endeavor to do something to have production in East Texas curtailed.

The Public Service Commission of Kansas has issued an ultimatum to refiners in that State that unless the price paid for Kansas produced crude is raised this week to a suggested price of at least 60 cents a barrel, the commission will issue an order for a hearing to determine the nature and extent of a shutdown order for the State.

TANK WAGON CHANGES

(Continued from Page 126)

tana except Butte where prices were advanced 2 cents.

Standard Oil Co., (Kentucky) reduced the gasoline tank wagon prices to 16 cents July 20 in Paducah, Ky., and the tank wagon and station prices to 13 cents each July 22 in Jackson, Miss. On the latter date these prices were reduced to 14 cents in Vicksburg, Miss. On July 21 the station prices were reduced to 14 cents at Atlanta, Ga., and to 16 cents at Macon, Ga. On July 23 the tank wagon and station prices were reduced to 15 and 16 cents in Jacksonville, Fla., and on July 17 to 16 cents and 17 cents in Tampa, Fla. On July 28 kerosene was reduced to 10 cents in Louisville, Ky. On July 28 the Alabama tax was advanced 1 cent to 5 cents and on August 1 the Florida tax was advanced to 7 cents.

Atlantic Refining Co., reduced gasoline tank wagon and station prices in Philadelphia to 10 cents net, effective August 3 and on August 5 the tank wagon and station prices were posted at 10 cents and 11 cents in the balance of the state. On the same date these prices were reduced in Delaware to 13 cents and 14 cents.

Magnolia Petroleum Co. advanced the gasoline tank wagon and station prices 1 cent throughout Oklahoma to 13 and 15 cents July 30 and advanced these prices in Fort Smith, Ark. to 14½ and 15½ cents August 7. On the same date these were posted at 16 cents in Little Rock, Ark.

CLAY WASTES AID IN DISPOSAL OF WATER

(Continued from Page 22)

tion could be obtained than at present if the waters of the two industries were run into a common lake of sufficient dimensions to smooth out fluctuations in composition. The proposed canalization of the Trinity River with its dams and locks should help considerably in this matter of mutual purification.

Summary

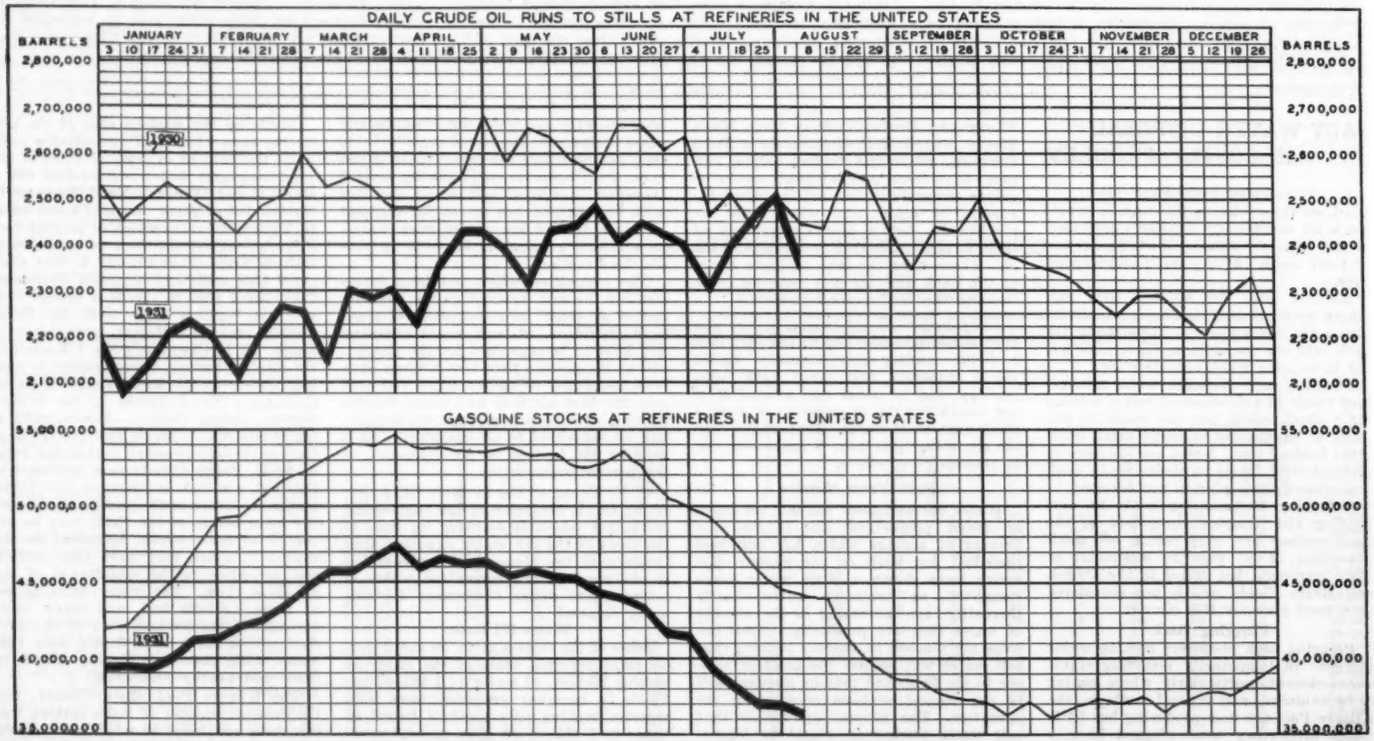
Concluding, it may be stated that using spent acid from oil treatment for treating clays affords an excellent means to dispose of this by-product. The slightly acid aluminum and iron solutions obtained thereby can be utilized with advantage for the purification of sewages from many other industries and also from cities.

AMERICAN PETROLEUM INSTITUTE WEEKLY REFINERY STATISTICS

The weekly report made to the American Petroleum Institute on refinery statistics—crude runs to still, gasoline stocks and gas and fuel oil stocks in barrels—for the week ending August 8.

	Week ending August 8, 1931				Week ending August 1, 1931				Week ending August 9, 1930			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
East Coast	100.0	478,000	5,674,000	10,312,000	100.0	453,700	6,103,000	10,362,000	91 8	83,600	1,451,000	1,046,000
Appalachian	91.8	105,400	1,321,000	1,440,000	91.8	108,400	1,282,000	1,432,000	100 0	483,400	6,549,000	10,147,000
Indiana, Illinois, Kentucky	98.9	341,700	5,420,000	4,144,000	98.9	339,400	5,525,000	3,994,000	99 6	296,200	6,777,000	4,396,000
Oklahoma, Kansas, Missouri	89.6	281,900	2,740,000	5,002,000	89.6	276,100	2,726,000	5,241,000	89 9	270,400	3,485,000	4,786,000
Texas	91.3	535,300	6,666,000	10,678,000	91.3	503,200	6,650,000	10,696,000	90.4	550,000	6,595,000	10,192,000
Louisiana and Arkansas	98.9	174,700	936,000	3,144,000	98.9	182,300	992,000	2,882,000	96 8	161,000	1,501,000	1,779,000
Rocky Mountain	89.3	43,600	1,478,000	761,000	89.3	46,000	1,565,000	826,000	93.6	54,900	2,301,000	1,218,000
California	96.5	479,000	11,646,000	97,498,000	96.5	473,200	11,899,000	97,953,000	99.3	538,100	14,070,000	105,678,000
Total United States	95.0	2,439,600	35,881,000	132,979,000	95.0	2,381,300	36,742,000	133,386,000	95 7	2,437,600	42,729,000	139,242,000
Texas Gulf Coast	99.8	415,100	5,512,000	7,387,000	99.8	395,100	5,524,000	7,445,000	100 0	433,700	5,338,000	7,114,000
Louisiana Gulf Coast	100.0	114,900	816,000	2,097,000	100.0	117,400	851,000	1,892,000	100 0	117,000	1,171,000	983,000

(1) Per cent refinery capacity represented. (2) Daily crude runs to stills. (3) Gasoline stocks. (4) Gas and fuel oil stocks.



Data for 1931 based on weekly reports of the American Petroleum Institute. Figures for last week not shown in graph but are included in above tables.

REFINERY RUNS WILL ESTABLISH NEW PEAK

(Continued from Page 18)

also. There has been a general tendency to curtail runs while in two instances, important refineries have been shutdown entirely. The Humble Oil and Refining Co. will not operate its 15,000 bbl. plant at McCamey and the Pasotex has shut down its 14,000 bbl. plant at El Paso.

Arkansas and North Louisiana

Arkansas and North Louisiana show the same constant routine of operations in their schedule for August as in the past months. In each case the runs have been slightly increased while the status of the operating and shutdown plants has remained the same.

REFINERY OPERATIONS IN KANSAS
(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs Aug. 1	Runs July 1
Altitude Petroleum Corp., Chanute	5,000	3,000	3,000
Barnsdall Refineries, Inc., Wichita	4,000	3,300	3,250
Derby Oil Co., Wichita	7,500	4,500	4,000
Eldorado Refining Co., Eldorado	4,500	3,000	3,000
Golden Rule Refining Co., Wichita	1,500	900	850
Kanotex Refining Co., Arkansas City	12,000	9,000	9,500
National Refining Co., Coffeyville	6,500	5,000	5,000
Phillips Petroleum Co., Kansas City	6,000	7,500	7,000
Shell Petroleum Corp., Arkansas City	22,000	22,000	15,000
Sinclair Refining Co., Coffeyville	12,000	11,000	11,000
Sinclair Refining Co., Argentine	9,500	5,000	5,000
Skelly Oil Co., Eldorado	23,000	15,500	15,100
Standard Oil Co., of Kansas, Neodesha	20,000	8,000	8,000
Vickers Petroleum Co., Potwin	2,500	3,000	3,000
White Eagle Oil Corp., Augusta	13,000	10,000	10,000
Total	150,000	110,700	102,700

REFINERY OPERATIONS IN WEST TEXAS
(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs Aug. 1	Runs July 1
Big Spring Refining Co., Big Spring	2,500	950	900
Big Lake Refining Co., Big Lake	2,000	(*)	(*)
Bluebonnett Oil Refining Co., Wickett	5,000	(*)	(*)
Burford Oil Co., Pecos City	6,000	3,000	5,500
Coltex Refining Co., Colorado	10,000	6,900	6,800
Cosden Oil Co., Big Spring	15,000	6,500	7,500
Deer Oil Corp., Luling	2,500	(*)	(*)
Grayburg Oil Co., San Antonio	6,000	800	1,000
Great West Refining Co., Big Spring	8,500	2,700	3,000
Gulf Oil & Refining Co., Sweetwater	5,000	5,000	5,000
Humble Oil & Refining Co., San Antonio	5,000	1,810	1,165
Humble Oil & Refining Co., McCamey	15,000	(*)	6,240
Magnolia Petroleum Co., Luling	5,000	3,900	5,000
Marathon Oil Co., Del Rio	5,000	1,500	1,800
Misko Refineries, Inc., Laredo	1,500	1,000	1,000
Mid-Tex Refining Co., Midland	2,500	(*)	(*)
Motor Fuel Products Co., Laredo	2,000	500	500
Pasotex Petroleum Co., El Paso	14,000	7,000	9,000
Pioneer Oil & Refining Co., Somerset	1,500	900	1,150
Richardson Refining Co., Big Spring	6,000	4,500	(*)
Rio Grande Oil Co., El Paso	6,000	(*)	(*)
San Angelo Refining Co., San Angelo	2,000	200	200
Sweetwater Oil & Refining Co., Sweetwater	2,000	(*)	(*)
The Texas Company, San Antonio	3,000	2,500	2,500
The Texas Company, El Paso	2,000	1,000	1,000
Tonkawa Petroleum Co., Pyote	5,000	1,500	1,500
Texas Mexican Oil & Refining Co., Laredo	600	500	500
Texas Petroleum Products Co., Somerset	1,500	1,000	1,000
Wickett Refining Co., Wickett	2,500	630	400
Total	147,600	54,290	62,655

*Shut down.

REFINERY OPERATIONS IN NORTH CENTRAL TEXAS
(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs Aug. 1	Runs July 1
All State Refining Co., Thrall	3,000	1,500	1,450
American Refining Properties, Wichita Falls	6,000	2,700	3,500
Apache Refining Co., Sunray	4,000	2,000	....
Archer Refining Co., Megargel	1,500	650	650
Arrow Refining Co., Overton	2,500	800	....
Atlantic, Pacific & Gulf Refining Co., Wichita Falls	5,000	(*)	(*)
Beacon Oil & Refining Co., Friars Switch	2,500	2,000	2,000
Boone Refining Co., Arp	500	350	300
Central Texas Refining Co., Angus	4,000	1,800	600
Central Refining Co., Friars Switch	10,000	7,500	....
Continental Oil Co., Wichita Falls	6,000	3,000	3,000
Dale Oil & Refining Co., Electra	4,000	3,000	3,200
Deer Oil Corp., Brownwood	2,000	(*)	(*)
Dixon Creek Oil & Refining Co., Kings Mill	3,500	2,400	2,500
East Texas Refining Co., Henderson	6,000	5,500	5,500
East Texas Refining Co., Longview	10,000	10,000	10,000
Empire Oil & Refining Co., Gainesville	5,000	3,600	3,600
Falls Refining Co., Wichita Falls	2,000	1,000	1,000
Gulf Refing Co., Fort Worth	10,000	5,600	5,600
Humble Oil & Refining Co., Breckenridge	2,000	(*)	700
Humble Oil & Refining Co., Chilton	4,000	1,100	1,400
Humble Oil & Refining Co., Boggy Creek	5,000	2,730	2,150
Iowa Park Producing & Refining Co., Iowa Park	2,500	900	1,000
Kilgore Refining Co., Kilgore	1,500	1,000	....
Kent Refining Co., Minerva	2,000	600	500
LaSalle Petroleum Co., Burkburnett (Noble)	3,500	(*)	(*)
Macmillan Petroleum Co., Isom	8,000	4,000	5,000
Magnolia Petroleum Co., Fort Worth	12,000	4,200	4,500
Magnolia Petroleum Co., (White Eagle plant), Ft. Worth	6,000	3,600	3,500
Magnolia Petroleum Co., Corsicana	5,000	4,500	5,000
Marathon Oil Co., Fort Worth	5,000	5,000	5,000
Muenster Refining Co., Muenster	300	50	50
Olney Oil & Refining Co., Olney	2,500	2,000	2,000
Oriental Oil Co., Dallas	5,000	1,000	1,000
Overton Refining Co., Overton	3,500	2,200	1,600
Panhandle Refining Co., Wichita Falls	5,000	3,800	3,830
Petroleum Refractionating Co., Pampa	6,500	6,500	6,500
Phillips Petroleum Co., Isom	18,000	17,500	15,000
Primrose Refining Co., Wichita Falls	2,500	2,500	2,500
Rusk Refining Co., Overton	3,000	1,500	....
Simms Oil Co., West Dallas	4,500	4,100	4,000
Southland Refining Co., Olney	1,000	250	200
Star Refining & Producing Co., Fort Worth	1,500	1,100	1,100
Slack Petroleum Corp., Camp Switch	1,500	1,200	630
Superior Refining Co., Tiffin	2,000	200	200
Taylor Refining Co., Taylor	6,000	3,000	3,000
Taylor Refining Co., Tyler	15,000	10,600	8,900
Taxman Refining Co., Wichita Falls	2,500	2,700	2,500
Texas Eagle Refining Co.	500	350	....
The Texas Company, Dallas	16,000	15,000	15,000
The Texas Company, Amarillo	4,000	3,000	3,000
Thurber Refining Co., Thurber	500	300	300
Tidal Western Refining Co., Burkburnett	3,000	(*)	(*)
Texas Pacific Coal & Oil Co., Fort Worth	3,000	2,000	2,000
Texas Pacific Coal & Oil Co., Caddo	1,000	750	800
Waggoner Refining Co., Electra	3,400	2,500	2,600
Wilcox Oil & Gas Co., (Pampa Refining Co.), Pampa	4,000	3,000	2,500
Total	262,950	168,130	149,960

*Shut down.

REFINERY OPERATIONS IN NORTH LOUISIANA
(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs Aug. 1	Runs July 1
Bayou State Refining Co., Hosston	750	(*)	300
Crystal Oil Refining Co., Shreveport	14,000	(*)	(*)
D'Artois Oil Refining Co.	50	25	25
Louisiana Oil Refining Co., Shreveport, Bossier	19,000	17,100	16,000
Spartan Refining Co., Shreveport	10,000	9,000	9,000
Stanolind Oil & Gas Co., Superior	3,500	2,800	2,800
The Texas Company, Shreveport	7,000	6,500	5,000
Total	54,300	35,425	33,125

*Shut down.

REFINERY OPERATIONS IN ARKANSAS
(Plants which have been in operation during the past year)

Company and location—	Daily capacity	Runs Aug. 1	Runs July 1
James H. Berry & Sons, Waterloo	2,000	1,000	1,000
Henry H. Cross Co., Smackover	6,000	4,500	4,200
Houston Oil Co., Camden	6,000	3,000	3,250
Kettle Creek Refining Co., Pearson	5,000	2,500	2,250
Lion Oil & Refining Co., El Dorado	12,000	7,100	7,400
Macmillan Petroleum Products Co., Norphlet	1,800	1,600	1,500
Ouachita Valley Refining Co., El Dorado	2,000	1,100	1,000
Root Refining Co., El Dorado	10,000	7,000	6,600
Simms Oil Co., Smackover	3,000	2,700	2,700
Union Asphalt Co., El Dorado†	....	....	....
Total	47,800	30,500	29,900

†Reduces residuum purchased from Lion Oil & Refining Co., No crude run.

OKLAHOMA GASOLINES ADVANCE RAPIDLY

(Continued from Page 12)

oil supplies returned in that state. The market then would again be dominated by a large excess production in East Texas, which would probably mean that gasoline would lose at least part of the recent advances.

Most observers, however, are slow in making any predictions pointing out that market conditions are not controlled by basic conditions within the industry, but are dominated by the uncertain whims of governmental agencies and as long as this continues, it is anybody's guess as to what the future holds.

At this writing there was a possibility that the governor of Texas would follow the lead of the Oklahoma governor and shut in a part of the State's crude oil production. A movement was also under way to shut down East Texas wells by voluntary agreements to obtain higher prices. If either of these developments materialize a situation might easily come about in which refinery gasoline prices would continue to advance rapidly. With so much uncertainty regarding the future most buyers and sellers are maintaining a "day-to-day" policy in regard to their sales and purchases.

Gasoline and Naphtha

U. S. Motor grade of gasoline advanced steadily all of the past week. Spot trading between jobbers, brokers and refiners has not been active due to the fact that most of the trading for the first 15 days of August took place the latter part of July and the first few days of August. Most of this buying was not on a flat basis but on contracts based on prices in effect on date of shipment so that the sellers are benefiting from the price increases except in cases where the contracts guarantee a minimum under the service station or tank wagon prices.

Spot buyers found that their usual sources of supply were either sold up or waiting to see what happens in the crude oil situation before making additional commitments. Several refinery operators fear that they will have to curtail their plant operations and they are conserving their gasoline supplies in order to take care of regular customers.

Most of the new buying has been between refiners and the first of the week at least, three Oklahoma refiners were still in the market. It is believed that considerable more buying will come into the market for the last half of August. Several refiners who are now sold up will have material to offer but conditions at this time point to an undersupply rather than an oversupply.

Buyers on Monday and Tuesday found 60-62 400 endpoint pegged at a low of 4 cents with quotations up to 4½ cents. Practically no trading was reported in 390 and 375 endpoints which are quoted at a low of 4⅛ and 4¼ cents. With natural gasoline selling above 4 cents the 350 and 360 endpoint grades were firm at 4⅜ to 4¾ cents.

Naphtha prices moved up along with the U. S. Motor grade. A few sales of 450 endpoint were made at 3½ cents the first of the week. There were a number of inquiries for 56-58 450 endpoint gasoline due to the advance in the U. S. Motor but the few refiners making the grade were asking 3½ cents and 3¾ cents on Tuesday.

It is believed that the advance in tank car prices will shortly result in higher tank wagon and service station prices in the Middle West. Scattered advances have already been made effective in adjoining territories. Should the major companies be faced with higher crude oil prices it is practically certain that general advances in tank wagon and service station prices would materialize. This would aid in making additional advances in the tank car market possible.

Kerosene

Most refiners in Oklahoma have advanced their price on 41-43 water white kerosene to a low of 2 cents with only small quantities available at 1⅞ cents. Prices on this grade up to 2¼ cents.

The demand for kerosene has improved and refiners are less disposed to force the product on the market. The two conditions account for the improved price situation.

Natural Gasoline

The shut down of wells in Oklahoma as explained elsewhere in this issue has brought a decrease in natural gasoline production amounting to approximately 500,000 gallons daily. This is approximately 40 per cent of the State's production.

Several of the larger manufacturers who had made commitments expecting a normal output in August have been forced to buy from other manufacturers. The first of the week about the only natural available for immediate shipments was storage material and sellers were asking top prices. So long as the production is shut in the demand will continue to exceed the supply and the only check on prices is the refinery market. Buyers usually find some way to do without natural gasoline when the price is out of line with the refinery market and it is known that some refiners in Oklahoma and Kansas have already reduced their purchases. All grades are quoted at 4½ to 5 cents.

Fuels

Many of the trade believe that the next few days will see a general advance in fuel oil, gas oil and distillate except the high cold test grades which are still freely offered by East Texas refiners. The high cold test fuel oil with gravities as high as 26 have been sold by the smaller East Texas refiners as low as 2½ cents per barrel and gas oil at 20 cents per barrel. Should the crude oil situation tighten up this high cold test material would be in demand as cracking stocks by the constal refiners.

In Oklahoma, the uncertainty regarding the crude oil supplies is helping to tighten the market for all of the heavier products with cold tests below 20. Some refiners who have fuel oil and gas oil are now refusing to sell. Buyers of furnace oil found very little material quoted in Oklahoma under 1¼ cents. This is for the better grades with a flash

around 175, low cold test and good odor. Buyers, however, were slow in accepting the higher prices. The price range on fuels continues from 20 to 40 cents depending on gravity, viscosity and cold test. There have been more inquiries for the 26 to 32 gravity material.

Lubricants

The advance in bright stocks was general during the week. The lowest grade was quoted at a low of 13½ cents with price ranges up to 17 cents for the 190-200 D color. Sellers do not believe that they will have any difficulty obtaining the new scale of prices with Pennsylvania bright stock selling for 24 to 26 cents per gallon. The price list of neutral was unchanged although it is predicted that some increases of the higher viscosity grades will materialize in the near future. Wax prices are unchanged.

REFINERS ARE LITTLE AFFECTED BY SHUTDOWN

(Continued from Page 14)

iana refinery at Baton Rouge, but in addition this volume of oil is expected to be delivered to the Ajax near Tulsa to be transported east. In effect, this will also act to replace Oklahoma and other Mid-Continent crudes in favor of the East Texas oil.

Refiners' Position

Among the refining companies affected by the shutting in of flush production in Oklahoma, the larger units seem to be the best situated to "sweat it out." The Continental Oil Co., with refineries at Ponca City and Sapulpa, have in excess of 6,000,000 bbls. of oil in storage, and this, together with considerable stripper oil being received, is able to continue to operate at its present schedule of runs for 450 days.

The Mid-Continent Petroleum Corp. is similarly situated and its Tulsa refinery could run in excess of a year on current gathering from stripper wells and from storage. It is thought this company has 3,400,000 bbls. in storage and receives stripper oil approximating 16,000 bbls. daily.

The Texas Company is also favorably situated with respect to maintaining present runs. Stripper wells are supplying nearly 10,000 bbls. of oil to the company at present and stocks of 2,200,000 bbls. assures the plant an adequate supply. This could be augmented by outside oil should the time come when the Texas-Empire line from East Texas needs to be called into this service.

The Empire Oil & Refining Co. is not only protected by the same pipe line system with respect to supplying crude to its Oklahoma refineries but has stocks of crude on hand and current gatherings to permit the present schedule of runs to continue for five months. This fact also takes into account supplying oil to the Empire's refinery in the Chicago area.

The Tidal Refining Co., Barnsdall Refineries, Inc., Phillips Petroleum Co., Sinclair Refining Co., Marathon Oil Co., Johnson Oil & Refining Co., Anderson & Prichard, Producers & Refiners and the Sun Oil Co. all have sufficient supplies and stocks on hand to allow them to operate for at least four months without making any other arrangements if they so choose. The Champlin Refining Co. has been credited with having very little storage oil, but officials of the company today stated there was sufficient oil in storage and being gathered daily to permit the refinery to run at least 45 days, after which time East Texas oil might be brought into the plant to augment any deficit in current supplies should the shutdown of flush production in Oklahoma extend beyond this period.

The companies less favorably situated include the White Oak Corp., the Gulf States Corp., Cushing Refining Co., Century Petroleum Co., Eason Oil Co., Globe Oil & Refining Co., Peveto & Peacock Refining Co. and the H. F. Wilcox Oil & Gas Co., but arrangements are now under way in each case for providing crude. In a few instances it will probably be the choice of the company to close down the plant temporarily, but the protection of their customers is being held uppermost in bringing about such a program.

PRESENT STATUS OF MAJOR OKLAHOMA REFINERIES

Company, refinery and location—	Present schedule of dly. runs (bbls.)	Estimated days' supply in storage or from stripper wells	Principal source of crude	Approx. rail rate to import East Texas oil (cents per bbl.) Pub.	App.
Continental, Ponca City	15,000		O. C., Sem.,	..	51
Continental, Sapulpa	1,500		Tonk. & Kans.	53	..
	16,500	450			
Mid-Continent, West Tulsa	15,000	Indef.	Sem., Creek Co.	56	..
The Texas Co., West Tulsa	14,000	Indef.	Sem., Creek Co.	56	..
Empire Ref., Inc., Ponca City	10,000		O. C. and	..	51
Empire Ref., Inc., Okmulgee	4,000		Seminole	53	..
	14,000	150			
Tidal Ref. Co., Drumright	10,000	200	Sem. and local	..	..
Deep Rock Oil Corp., Cushing	10,000	45	Wewoka and local	56	..
Barnsdall Ref., Inc., Okmulgee	6,000		Sem. and O. C.	53	..
Barnsdall Ref., Inc., Barnsdall	3,500		Osage	..	..
	9,500	130			
Pure Oil Co., Muskogee	7,500		Seminole	53	..
Pure Oil Co., Ardmore	2,100		Healdton	..	..
	9,600	50			
Champlin Ref. Co., Enid	14,500	45	Sem., O. C., Tonkawa	..	51
Globe O. & R. Co., Blackwell	6,500		Local	..	..
Globe O. & R. Co., Cushing	S.D.			56	..
	6,500				
Phillips Pet. Co., Okmulgee	5,000	120	Seminole	53	..
Sinclair Ref. Co., Sand Springs	5,000	Indef.	East Texas	56	..
Marathon Oil Co., Bristow	4,000	Indef.	Local	53	..
Johnson O. R. Co., Cleveland	4,500	Indef.	Local	56	..
Anderson-Prichard, Cyril	4,000	Indef.	O. C. and local	..	..
Prod. & Ref. Corp., West Tulsa	4,000	Indef.	Seminole	56	..
Sun Oil Co., Yale	4,000	120	Sem. and local	56	..
Cushing Ref. Co., Cushing	2,500		Local	56	..
Cushing Ref. Co., Blackwell	1,500			..	..
	4,000				
White Oak Corp., Allan	2,000	30	Allan	Under consid.	
Gulf States Corp., Okla. City	800	30	Okla. City	..	..
Total	159,900				
Per cent of total in State	33				

PRESENT FREIGHT RATES OR PROPOSED RATES ON CRUDE MOVING FROM EAST TEXAS ORIGINATING ALONG THE ROADS AS SHOWN

	Rate cwt.	R.R. origin— I.&G.N.	T.&P.	Cotton Belt
Oklahoma—				
Enid†	16½			
Ponca City†	16½			
Cushing	*18	x		
Tulsa	18	x		
Okmulgee	17			x
Allen	(‡)			
Duncan	14½			x
Cleveland	*18	x		
Yale	*18	x		
Muskogee	17	x		
Sapulpa	17			x
Bristow	17			x
Kansas—				
Coffeyville	16½	x	x	x
Neodesha	16½	x	x	x
Augusta	17			x
Ark. City	16½	x	x	x
Wichita	17½	x	x	x
Eldorado	17½	x	x	x
Texas—				
Olney	12			x
Gainesville	12		x	x
Wichita Falls	12			x
Burkburnett	12			x
Fort Worth	9	x		
Dallas	9	x		
Big Spring	14		x	
Arkansas—				
Camden	8½			x
El Dorado	11			x
Missouri—				
Joplin	16½	x	x	x
Kansas City	20	x	x	
St. Louis	20	x	x	
Gulf Ports—				
Texas Gulf ports	11	x	x	x
Plaquemines, La.	11		x	
Westwego, La.	14		x	
Good Hope, La.	14			x
New Orleans, La.	14			x
Baton Rouge, La.	14			x
St. Rose, La.	14			x

*After September 4, 1931. †Approved but not published. ‡Rate under consideration.

OPERATE NEW PLANT

The new 8,000 barrel refinery of Producers and Refiners Ltd. located at Torrance, Calif., has been completed and is now operating. The plant was built by the Technical Engineering Co., and is located on a site formerly occupied by a natural gasoline plant belonging to Exeter Oil Co. Grey M. Skidmore is an official of the Producers and Refiners Ltd., which is a newly organized company.

TEXAS LEGISLATURE FAILS TO TAKE ACTION

(Continued from Page 13)

as a last resort," and not if a conservation bill is passed at this session.

The lone protest against the martial law method was made by J. F. Cunningham, Abilene, father of Senator Oliver Cunningham, who insisted it is unconstitutional, and advised Governor Sterling to hold another special session in 30 days.

The telegrams were unanimous in approving Governor Sterling's view that the Rawlings senate substitute bill weakened rather than helped present laws.

The West Texas Chamber of Commerce informed Governor Sterling 100 of its cities and towns will join in protesting the Rawlings substitute. The Fort Worth and Tyler Chambers of Commerce messaged him in hot protest. Sam Kruger, Wichita Falls, was among the independents pleading for Governor Sterling to "stop thieving of East Texas oil."

Charles West, former attorney general of Oklahoma and former Wichita Falls man, conferred with Governor Sterling as Gov. W. H. Murray's personal representative, and was sent to Attorney General Allred for further conferences. "Governor Murray wants to know what Texas is going to do about the East Texas situation," Mr. West told Governor Sterling. He advised Governor Sterling that no law at all is needed except common law and implied powers to check conditions of waste in East Texas.

Pipe Line Bill Passed

The house Monday accepted Senator Tom Pollard's substitute oil and gas pipe line regulation bill, and sent it to Governor Sterling's desk with a vote that will make it effective when approved.

Bills to Conference

The house by a vote of 106 to 19 refused to concur in the Rawlings substitute for its Wagstaff conservation enforcement bill which Governor Sterling also disapproved as less effective than present laws. This sent the Wagstaff-Rawlings bills, one having passed each house, to conference for possible final agreement between the two before adjournment Friday.

The conferees are: House: Wagstaff, Petsch, Graves, Ford, Duvall. Senate: Rawlings, Woodward, Pollard, Gainer, Small. Lieutenant Governor Witt said he named two from each faction and Senator Charles S. Gainer, who had voted "present" on substituting the Rawlings bill, but stood for the enactment of some sort of a law.

Representative R. M. Wagstaff, author of the conservation enforcement bill supported by Governor Sterling, told the house as he led a successful fight to have it reject the Rawlings substitute that was adopted in the senate last Saturday night, that the Rawlings substitute bill would prohibit equalization of the use of gas energy throughout a pool, requiring gas-oil ratio for each well. He said the substitute had taken out all ratable taking provisions. None of the facilities for speeding up court action was kept in it, he said, except the power of the Railroad Commission to bring injunction suits against violators.

He asserted the bill would take away part of the power held by the Railroad Commission now for enforcement, and prohibited regulations for ratable taking among different wells in a field.

He pointed out the pipe line bill that has been passed finally required ratable acceptance for transportation, but that this would be nullified in discarding ratable production.

"Pass this bill and you turn East Texas over to the violators, and you turn West Texas over to those dissipating gas into the air in incredible quantities," he said.

Representative J. C. Duvall, Fort Worth, led a fight to have the house concur, but was voted down 23 to 103.

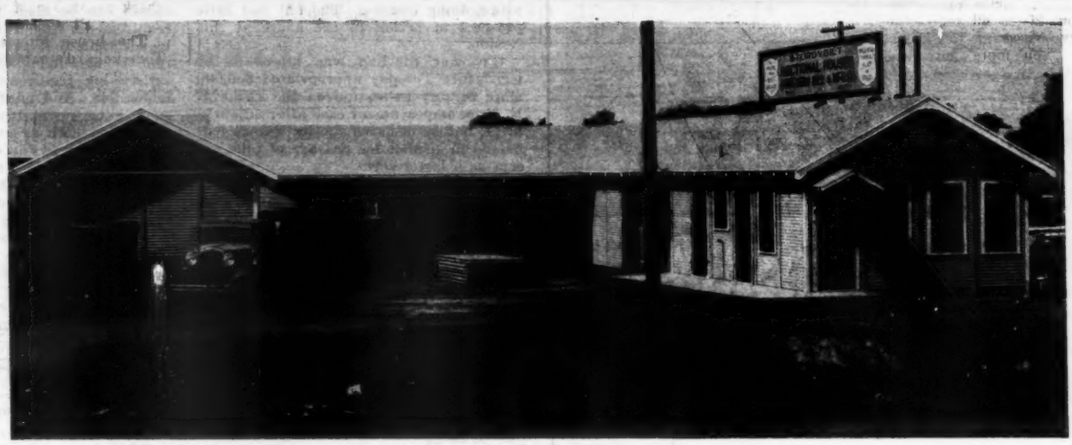
Mr. Duvall cited a ruling from Fred Upchurch, assistant attorney general holding that he without having secured departmental ruling, was of the opinion that parts of the Wagstaff-Woodward bill were unconstitutional, particularly its prohibiting pipe lines to accept oil beyond the "market demand."

Attempts to write a compromise law out of the Wagstaff house and Rawlings senate conservation enforcement bills was left Tuesday in the hands of a subgroup of the conference committee of the house and senate appointed Monday night. The members of the subcommittee were Senators Woodward and Rawlings and Representatives Wagstaff and Duvall. A new session of the entire conference group was called for 2 p. m. Tuesday to ascertain whether any agreement had been worked out.

Oil Tax Bill

The house passed Representative Milton West's graduated oil tax bill, after adopting a new scale of rates designed to increase present oil production revenues $6,000,000 to $7,000,000 a year. It aims for conservation by holding down well production, and to meet Governor Sterling's plea for more revenues from oil. Its scale follows: All oil up to 5 bbls. per well daily, 1 cent per barrel; additional oil up to 20 bbls. at 1½ cents; additional up to 40 bbls., 2 cents; additional up to 100 bbls., 3 cents; additional up to 1,000 bbls., 4 cents, and all production over 1,000 bbls. from each well daily, at 6 cents per barrel. Passage through the house was probably meaningless since there appeared no prospect that the bill would get consideration in the senate before adjournment Wednesday.

Senator Walter F. Woodul of Houston secured final passage in the senate Tuesday of his bill to regulate offset drilling



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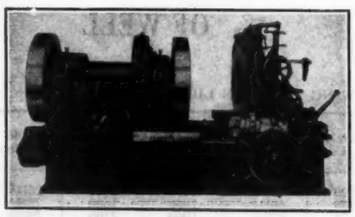

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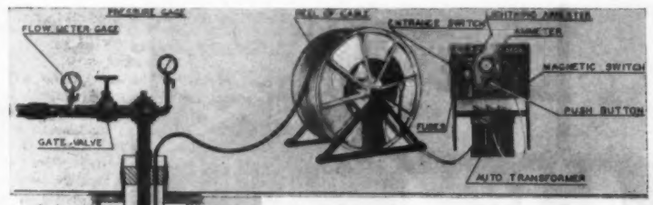

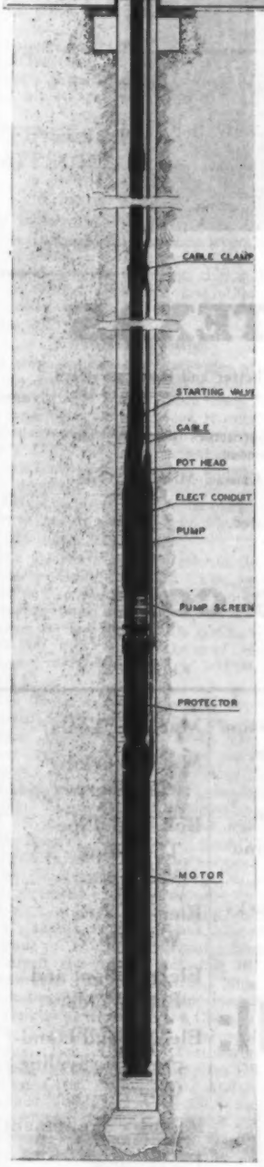

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	30	3000	500	60D4	1000	1600	25H4
	40	4000	570	87D6	1000	2700	29H6
	60	5000	700	116D8	1000	4000	28J8
	75	5000	900	120D10	1000	5000	34J10
8"	120	4000	2000	50C6	1600	5100	32C6
	140	4500	2100	57C7	1700	5800	22R7
	180	5000	2200	64C9	1800	7200	24K9

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by providing court procedure available to adjoining owners. The bill had little prospect of action in the house at this session.

Governor Sterling was informed the legislature Tuesday appropriated $50,000 more to stay in session on the Judge J. B. Price impeachment case after adjournment, but he declared the legislature will not be in session for passage of bills except as a last resort.

The pipe line bill was on his desk but he said he had not had time to read it, and declined to indicate his attitude on approving it. It will be effective the moment it is signed.

Differ on Pipe Line Bill

The new pipe line bill is emendatory of the pipe line and common purchaser act of the forty-second legislature. Where the law was applicable only to pipe lines carrying oil, this bill is applicable to pipe lines carrying gas. It puts storage companies more comprehensively under the regulatory powers of the Railroad Commission, both as to charges and as to character of service. It directs the commission to regulate and promulgate rates of charge "for gathering, transporting, loading and delivering" oil, as well as for the use of storage incident to transportation and single as well as joint line rates. Pending the establishment of permanent rates, which may be done only after hearing, it may promulgate temporary rates.

The rates are to be those which "will provide a fair return on the aggregate value of the property," used and useful, after making reasonable allowance for depreciation and other factors. It carries the additional stipulation that, in its first determination of such rates, the commission shall take into consideration "the past earnings of such carrier." Once a year, either on its own motion or on complaint, the commission shall reconsider all existing rates for the purpose of determining whether they "conform to the basis of rates and charges" set out in the bill. The commission is given authority to require extensions of pipe lines and enlargements of storage facilities, and no pipe line may be abandoned without its permission.

Amends Common Purchaser Act

The bill re-enacts the common purchaser provisions of the existing law, but also makes some additions to it. One is to make the carrying and purchasing of natural gas subject to the same condition imposed on the carrying and purchasing of oil. Common carriers and purchasers of oil and gas who are in any wise affiliated with a common carrier pipe line are common purchasers and must purchase "without discrimination" as among producers and "without unreasonable discrimination" as among the several fields of the State, the question of reasonableness to be determined by the commission. It is a provision which authorizes and directs proration, but a proration of the purchase of oil and not of the production of oil. The transportation and purchase of oil that has not been produced in accordance with the laws of the State and rules and regulations of the Railroad Commission are made unlawful.

The penalty is to be not less than $100 and not more than $1,000 for each offense, and each day's violation is to be a separate offense. One-half the penalty recovered goes to the party injured by the violation. In addition, he is given a cause of action for damages.

For the violation of any provision of the law or valid order of the Railroad Commission, the attorney general may bring suit for forfeiture of charter or of permit in the case of a foreign corporation and for continuing violation after a final judgment sustaining the order of the commission, the offending corporation may be put into the hands of a receiver.

The sponsors of the bill contended that its requirement of ratable taking and purchase would cause a decrease in the production of oil and improve the condition of the oil-producing industry, but this was denied by the advocates of conservation, who argued that if the principle of ratable taking is enforceable at all, it can be done only on the basis of equal or approximately equal prices as respects all productions. That a purchaser can be made to take part of his requirements from a production at a price higher than that at which other production is obtainable in quantities which satisfy his requirements, is held to be impossible. And unequal prices, it is argued, must result from such competitive production both as among fields and individual operators in each field, with the result that the older and smaller producing fields would be largely crowded out of the market by the newer and larger ones, notwithstanding the injunctions of the common purchaser act. It is their contention that there must be some such restriction on production as would result from enactment of a conservation bill, to afford any chance for the enforcement of the common purchaser act.

Late Fields

(Continued from Page 24)

water in the bottom of the Wilcox sand at 2,500 feet, and was plugged back to 2,440 feet in the Simpson sand. The well was shut in waiting for the cement.

South of the Mission Pool, in Seminole County, Burgher Oil & Gas Co. and others' No. 1 Charlie, SW cor. NW SE. Section 18-8-6, was waiting for cement to set. The total depth of the test is 4,299 feet in the Wilcox sand with the 6-inch casing landed at 4,220 feet.

In the Oklahoma City field, Wilcox Oil & Gas Co. and Anderson-Kerr's No. 1 Danforth, NE cor. SE NE SW, Section 15-11-3w, flowed 2,140 bbls. of oil in one hour and a half, with 27,000,000 feet of gas a day. The oil and gas were found in the Wilcox sand at 6,425-6,540 feet.

The Continental Oil Co. is reported to have purchased a one-half interest in the Westgate Oil Co.'s properties in the Oklahoma City field. No consideration was reported. The properties consist of 5 completed wells with an estimated potential of 175,000 bbls. of oil a day, together with approximately 105 acres of leases in the field. The wells are located as follows: Two in the Carey lease in Section 34-12-3w, and No. 1 Wilson, No. 1 Kelsey and No. 1 Grace, in Section 10-11-3w.

V. T. BONNELL, VETERAN IN OIL INDUSTRY, DEAD

Vachel T. Bonnell, 79, veteran oil man and father of Robert A. Bonnell, general superintendent of the Tidal Oil Co., died last Sunday, August 9, in the home of his daughter, Mrs. Harper F. Tennant, Tulsa, where he had resided since the death of his wife 15 years ago in an automobile accident.

Mr. Bonnell, who was born in Brownsville, Ohio, worked as a young man on steamboats plying the Ohio, Missouri and Mississippe Rivers and throughout his life he was fond of relating incidents of those adventurous days. In 1889 he entered the employ of the Fisher Oil Co. and worked in eastern oil fields until 1906, when he went to Oklahoma. From that time until his retirement in 1914 he was in the service of The Texas Company.

Besides Robert A. Bonnell and Mrs. Tennant, Mr. Bonnell leaves the following children: J. Frank Bonnell, with Oil Well Supply Co., Lexington, Ky.; Thomas W. Bonnell, with the Frick-Reid Supply Corp., Tulsa; Mrs. J. B. Johnson, Mrs. E. A. Hollis and Mrs. Thelma Waller, Tulsa; Glen E. Bonnell, with Gypsy Oil Co., Tulsa, and George H. Bonnell, with Bridgeport Machine Co., Wichita, Kans. Mr. Bonnell was a Mason, and following funeral services in the First Methodist Church, Tulsa, Tuesday afternoon, the burial in Rose Hill cemetery was under Masonic auspices.

RUSSIAN OIL PRODUCTION

NEW YORK, Aug. 8.—Production of the Azneft Oil Trust, one of the leading Soviet oil units, during the first six months of 1931 amounted to 6,407,040 tons, or 93 per cent of the program for this period.

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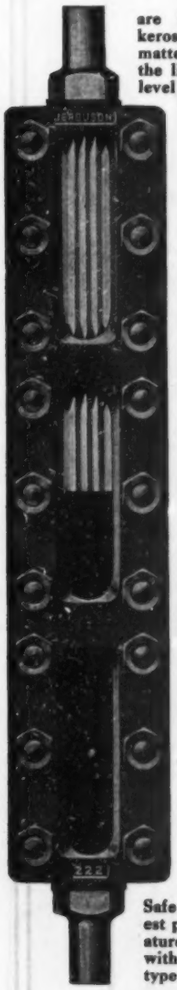

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Profit by using the *Classified Section* of The Oil and Gas Journal

NUMEROUS PROBLEMS WILL BE ENCOUNTERED

(Continued from Page 30)

lem that it hardly seems possible at this stalled at wells made ready for pumping in the East Texas Field. With the engine reverse clutches are used and reduction units.

At some wells gas is available in sufficient quantities to furnish power for pumping and there will be some demand for the gas engine for that purpose. Natural gas is sold in the field by some of the companies who have lines crossing it.

Steam pumping engines are now in use on some properties but most of them were moved in from other districts. Fuel oil is being used to fire the boilers, in fact crude oil direct from the well is being used in some cases.

Rig Fronts of Steel

The wells visited that were equipped with pumping fronts all had steel sampson and jack posts, steel walking beams and pitmans and most of them had bandwheels with the standard type A.P.I. 6-inch rig irons. Some wells were equipped with pumping units and these units were driven by both gas and oil engines and electric motors.

Preparation has been made for pulling rods and tubing and draw work type winches installed in some instances whereas the bullwheels have been used at other locations. Some wells are without derricks over the hole and pulling machines with portable mast will be used there for removing rods and tubing. Where the holes are reasonably straight the pulling of rods and tubing will not require a great deal of time and for that reason it is thought many of them will be served by winches mounted either upon truck or tractor which can serve many wells in the same area.

Some companies are making a careful study of this pulling problem and giving consideration to equipment designed for this peculiar type load which places rather severe demands upon the prime mover because of the repeated starting and stopping of the string of rods or tubing as it comes out or goes into the hole.

On many of the older leases wooden derricks were erected because of their low first cost and the speed with which they could be built out of native lumber, but as the field got older and drilling programs were slowed down somewhat the steel derrick has been used more and more and it is quite noticeable that in the central and northern ends of the field steel derricks predominate. It seems quite probable that the wooden derricks will be replaced by steel pumpers on many wells, especially when the probabilities of loss due to high winds common to this section is considered.

Where the steel derricks have been equipped for pumping concrete floors have been cast in many instances and all fire hazard about the property reduced to a minimum. This is good practice if the field is to be as long lived as many are inclined to believe and fully justified in any event if the wells will produce oil at the rate many of them have been doing since completed.

An all-steel equipped well ready to pump in the Kilgore Pool, East Texas Field. Cranfill-Reynolds Co.'s No. 1 J. M. Blackman. Concrete derrick floor.

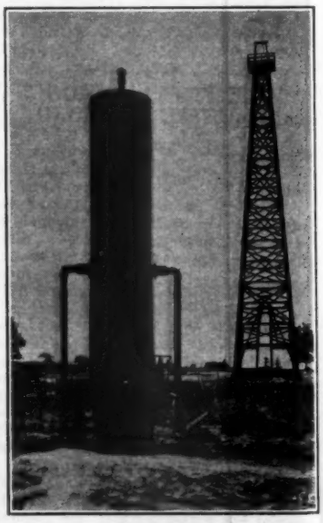
Bottom-Hole Equipment Needed

When the wells are completed it is customary to run a string of tubing immediately and produce the oil through it at all times. At the bottom of the hole there is run a perforated liner and it is not known that sand screens have been used yet, but it would seem that they would be most desirable in many soft sand wells. Inquiry did not develop much trouble with sand up to this time and it is possible that even where the producing formation is quite porous the sand will not wash into the hole because of the presence of volcanic ash that forms a cementing medium between sand grains.

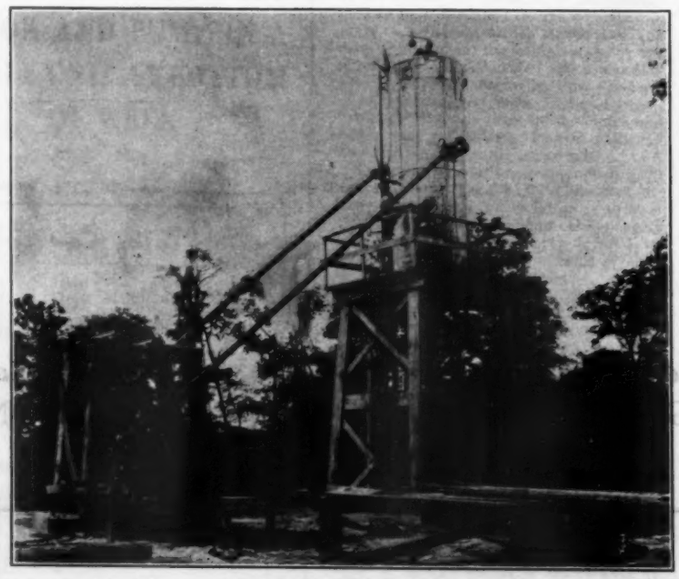
This volcanic ash varies in percentage over wide ranges but it is present in some degree in all parts of the field and is assumed to have come from a chain of active volcanoes that existed during Austin age along what is now the shore line of the Gulf of Mexico and others located to the north and northeast in the present State of Arkansas. Other regions bear witness to their extreme activity and it seems that the clouds of ash blown over this old sea found a resting place on the bottom among the muds and sands which were later charged with oil and gas and are now known as the East Texas oil field.

Selection of pumping equipment will be left largely with the production and engineering departments of the larger companies and they will give this matter careful study and apply to this area the latest and best practice gained from experiences in other fields. Whether short strokes and comparatively rapid motion, or long strokes with slow motion will be the ultimate choice of the engineers remains to be seen, but at this time it is customary to pump most wells with about 24 to 42-inch strokes at from 18 to 30 strokes per minute.

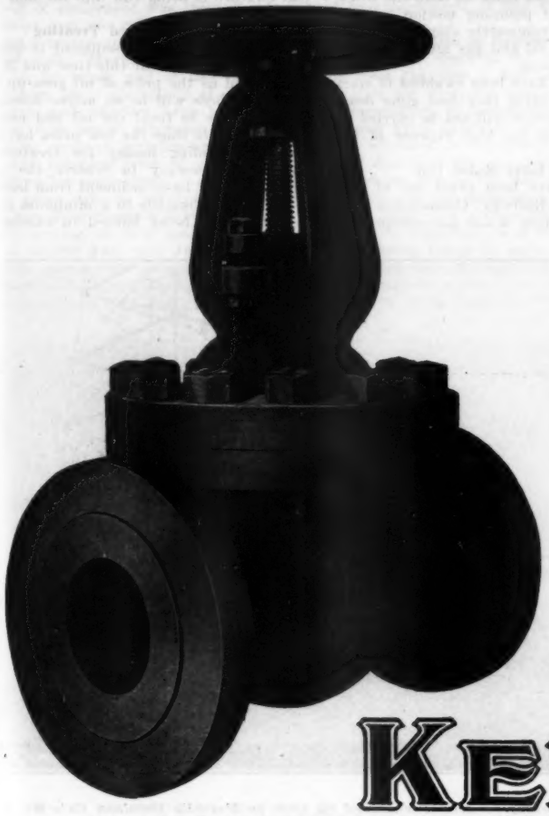
This comparatively rapid motion is used on many wells because it has been found if they are agitated they will flow naturally and the pumping operation is carried on for this purpose, and the well



Oil and gas separator in East Texas oil field.



Oil and gas separator on O. G. Oliphant's lease in Kilgore district, East Texas Field.



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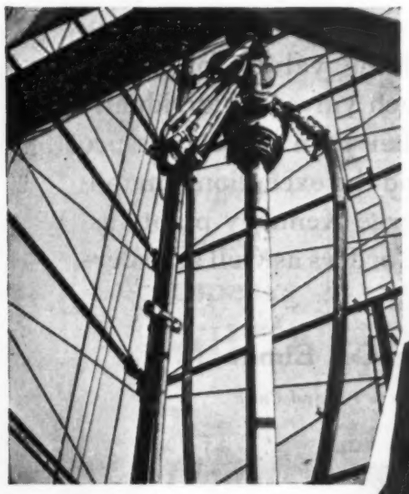

TWO PLUGGED BITS *were encountered on this well. One plug was forced out by pressure, the other had to be removed because pump stalled. Very few lengths of hose stand up under this. The well was successfully completed 23 days later, and hose moved to another location.*

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actually produces more oil than the working barrel and pumping motion can account for by volumetric displacement so the additional oil and gas must be raised by natural means.

A few wells have been swabbed to start them flowing after they had gone dead, but such a practice will not be carried on long because of the high expense of the operation.

Gas Lifts Ruled Out

Gas lifts have been ruled out of this field by the Railway Commission and with the exception of one four-compressor plant upon a property operated by H. L. Hunt without nearby offset wells there are no longer any gas-lift wells in the field. Several plants that were built have been shut down and if they are put to further use it has been suggested that they might pump hot gas into the wells during cold weather to reduce the accumulation of paraffin in tubing.

This oil has a rather high paraffin content and has been found to deposit a considerable quantity of wax in the tubing in the well as well as in flow lines to traps and from traps to storage tanks. While the weather has been hot during the major portion of the field's life many operators look forward with apprehension to the conditions that will exist when colder weather sets in. On the H. L. Hunt-Ashby lease they are already equipped to treat their wells to remove paraffin from the tubing and the chemical mixture is being run into the hole as occasion requires.

Cut Oil Will Need Treating

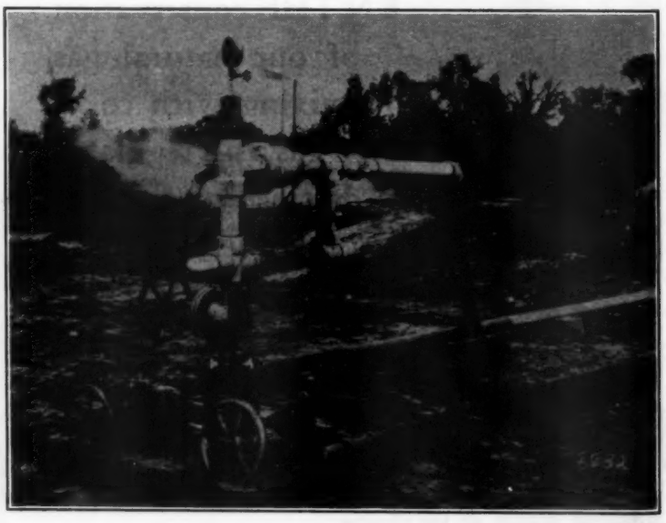
A good deal of basic sediment is being burned on all leases at this time and it is anticipated as the price of oil goes up in this field there will be an active demand for chemicals to treat cut oil and emulsions. At this time the low price hardly justifies spending money for treatment but it is necessary to remove the accumulations of basic sediment from leases to reduce fire hazards to a minimum and it is therefore being burned in considerable quantities as may be noted from the numerous slush pit fires burning in all parts of the fields at all times.

The pipe line requirements are seven-tenths of 1 per cent or less water and cut oil in tanks turned to pipe lines but it is understood that this has not been strictly followed in all cases because of the low prices for which the oil has been selling. It is therefore difficult to get a definite check upon the number of wells making cut oil at this time but reports have been made of as many as 130 which may be low if the pipe lines were strictly enforcing their rules on crude oil grade from this field.

New Material Will Be in Demand

The first rush for drilling and producing in this vast field caused many companies to move in large quantities of used material from other districts and one report has it that over 5,000 cars of

Pumping unit ready for service with steel rig front on Magnolia Petroleum Co.'s No. 1 B. E. Roddin, in Lathrop Pool, Longview district, East Texas fields.



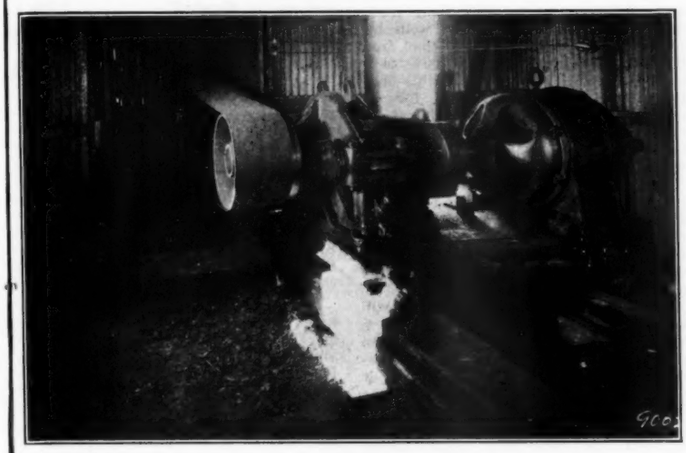
Typical hookup on East Texas oil well. Sun Oil Co.'s lease, Joiner Pool, Rusk County.

this kind of equipment was shipped into the district over one railroad line serving it during a month and half period during the first rush. Much material was also moved in by truck and it has been a place where many thousands of tons of equipment and supplies have been disposed of that would otherwise have remained in company warehouses in other fields and retarded sales of new equipment there for some time.

It is quite safe to say that material moved into East Texas will remain there and the buying of new equipment and supplies during June and July indicates that the movement of old stuff has passed its peak. The same is true of machinery required for drilling and pumping need new equipment of one kind or another.

Suggestion to Salesmen

A systematic study of the lease operations from the time a location is made until it is put upon the pump is possible by observation of conditions existing there and upon adjoining properties and if the salesmen keep records of casing points, depth drilled in, top-hole pressures, water movements and appearance of cut oil on the lease they should be able to judge for themselves quite accurately the requirements of the operators and by being ready to serve their customers with such supplies and equipment as they will need should be able to get their share of the business without causing the operators on the property undue annoyance by following them up daily for business which may not be ready to place for some time to come.



Reduction gear box and electric motor drive for pumping wells as used in East Texas oil fields.

and it would therefore seem that the manufacturers of all classes of oil field equipment will enjoy a good business here from now on in new goods.

Field men in this district are for the most part busy with their various duties and leave the purchase of new equipment and supplies largely in the hands of the purchasing agents and engineering departments in the home offices. To call upon the field men is essential but many salesmen can find out all there is to be known about the properties by making periodical visits to the various wells and noting conditions there. Pressure gauges at casing and tubing heads will indicate clearly the top hole pressures and as those pressures fall off it will be possible to estimate quite closely when the wells will have to go on the pumps and will

The field development will not be difficult to anticipate and in as much as it is so large that several salesmen for each concern doing business there will be necessary it should be a simple matter for each of these men to become thoroughly familiar with each customer's requirements and become an actual assistance to the field men on the property by anticipating needs and being ready to serve as conditions change.

It should be also the duty of every company to be certain that its particular type of equipment is going to be well suited to this field's requirements and be in position to go before the company en-

Thirty-five-horsepower gas engine pumping W. B. Hamilton's No. 1 and No. 2 Camp, Joiner Pool, East Texas Field.

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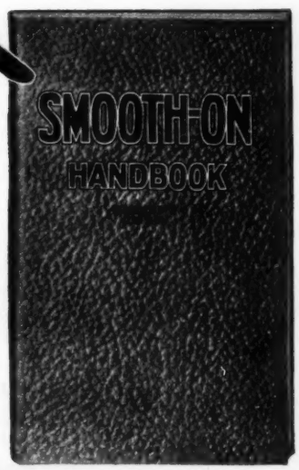

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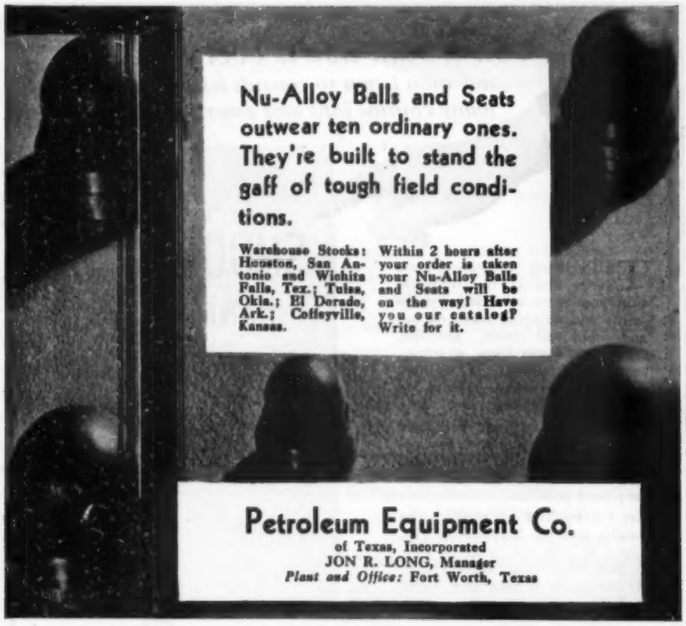

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gineer and production superintendent and demonstrate to their complete satisfaction that such is the case, for with the vast number of wells still to be drilled in this field it will be the policy of many large operators to more or less standardize upon their requirements in all lines of supplies and machinery and once this has been done it will be possible for the manufacturer to get a good line upon future business by periodical reports from his field men covering the different parts of the field.

To Drill 5,000 to 6,000 Wells

It is now estimated that there will be not less than 90,000 productive acres in this pool, and there has already been completed about 1,350 wells. It is the policy of all larger companies so to space their locations as to drill their leases with the minimum number of wells but in any event it would seem that from 5,000 to 6,000 more wells will have to be drilled to get this oil and that this drilling campaign will be carried forward over a period of two or three years according to the demand for this oil and the rate at which it is extracted and water moves through the field.

The life of the field has been estimated to extend over wide ranges of time from 3 or 4 to 10 or 12 years and it will be difficult to make any accurate predictions on that point until the rate of withdrawal of the oil has been finally definitely decided upon. If restricted to 250,000 to 300,000 bbls. per day, it will be many years before it will be exhausted and the drilling and production program will be carried on in a conservative manner. If, on the other hand, it continues to produce at its present rate of over 500,000 bbls. daily the drilling campaign will have to be speeded up materially in order that wells making water and going dead may be replaced by active producers.

Whatever may be the future production program for the area there is no doubt as to its consumption of a vast amount of new material of all kinds and to sell his share of it each manufacturer must be alert to his opportunities and his salesmen must make detailed studies of the territory assigned to them for it will be highly competitive business, and because of its volume well worth going after in a serious and systematic manner.

POWER CONFERENCE WILL BE HELD IN KANSAS CITY

On September 7 to 11, inclusive, there will be held in Kansas City, a general meeting of National Association of Power Engineers, and also a meeting of the Petroleum Division of A.S.M.E. In addition, the A.I.E.E., A.S.H.&V.E., A.S.C.E., and A.C.S., along with the Chamber of Commerce and other engineering societies will be brought together in a conference known as the "Southwest Power Conference," of which A. L. Maillard of Kansas City is chairman, representing all of the engineering societies.

Arrangements have been worked out with the Commercial Section of the N.E.L.A. and also the General Power Committee of N.E.L.A. to also arrange a conference during the "Southwest Power Conference." The General Power Committee of N.E.L.A. has arranged for the subcommittee on oil pumping, production and refining, to hold a conference on Thursday, September 10.

RESTRICTIONS IMPOSED ON INDIAN OIL LEASES

MUSKOGEE, Okla., Aug. 10.—New restrictions have been placed on those who purchase oil and gas leases on Indian lands of the Five Civilized Tribes, it was announced in a notice of an oil and gas lease sale on tribal property to be held here August 6.

Under an order of the secretary of the interior, the secretary may impose restrictions as to the time of drilling wells and as to production from wells drilled when he believes such action may be necessary for protection of the rights of the red man. State laws and "lawful agreements among operators regulating either drilling, production, or both" will be observed on order of the secretary.

Oil and gas leases on 72 tracts of Indian land in 13 counties will be sold under the auctioneer's hammer, August 6, A. M. Landman, superintendent of the Five Civilized Tribal agency here, said.

In addition the agency will sell in fee simple six tracts of restricted land in Seminole County, two in Grady, one in Garvin and one in McClain.

Most of the leases offered, 22, are in Seminole County. Eleven are in McCurtain County, eight in Stephens County, two in Okmulgee County, eight in Okfuskee County, four in Nowata County, ten in Creek County, one in Muskogee, two in Hughes, one in Atoka, two in Grady and one in Marshall.

PLAN FLOATING STATION FOR PLANES AND SHIPS

At Ensenada, Mexico, near the most southerly point of Lower California, the Standard Oil Co. of Mexico will erect a marine plant with floating station at a contemplated cost of $65,000. This will be available for the convenience of ships and airplanes. Plans for this plant have been completed and the California Standard Oil Co. of Mexico will undertake the construction and operation of the plant.

The plans call for three steel tanks, situated on shore, two of which will have a capacity of 5,000 bbls. for gasoline and Diesel oil storage, and the third tank, for kerosene storage, will be of 400 bbls. capacity. The floating plant will have direct supply from the shore plant by remote control. The depth of water in the vicinity of the wharf is 14 feet to 20 feet.

Protection against fire will be provided for by fire walls surrounding the tanks and fire foam fighting apparatus will be available. Construction of this plant depends upon the completion of the extension of the wharf at Ensenada by the Hotel Playa.

At Sauzel, near Ensenada, the Union Oil Co. of California has completed construction of a marine plant and marketing station for gasoline and Diesel oil. The plant consists of two steel tanks, each with a capacity of 400 bbls., one of which is for gasoline storage and the other for Diesel oil. A 1,000-foot pipe line connects each tank with the end of a 500-foot wharf, from where ships may be bunkered and serviced. The depth of the water at high tide is 12 feet to 14 feet. A pumping plant is situated close to the tanks.

Protection against fire is offered by extinguishers of the foam type, in addition to which the pipe lines are generously grounded and have an outside covering of tar.—C. E. K.

UNITED KINGDOM'S OIL TRADE SHOWS DECLINE

During the first five months of the current year the United Kingdom imported 22,278,619 bbls. of petroleum products and 4,961,275 bbls. of crude petroleum, of which 3,668,683 bbls. came from Persia. In the corresponding months of 1930 imports of petroleum products came to 23,364,477 bbls., and crude imports were 5,288,526 bbls., including 3,669,680 bbls. from Persia, indicating that this source is furnishing an increasing proportion of the total crude receipts. While there was a decided decrease in imports of most products, increases were noted in receipts of fuel oil and kerosene.

While there was a marked decrease in exports of most petroleum products during the first five months of 1931, exports of gas oil were almost double those of the corresponding period of 1930. Total petroleum exports were 821,296 bbls. from January to May of the present year, compared with 1,307,711 bbls. in the first five months of 1930. Corresponding figures on re-exports are 806,768 bbls. for the five months of 1930 and 657,660 bbls. for the five months of 1931. There was a decline in the shipments of fuel oil for bunkers.

WILDCAT OPERATIONS IN OKLAHOMA

(Continued from Page 50)

KAY COUNTY

Lewis et al's No. 1 Harris, SE NW Sec. 14-25-1 ..... Location.
Mummert Drlg. Co. et al's No. 1 Cormick, C NW SE Sec. 9-27-2 ..... Cleaning out 3,693 ft.
Blackwell Oil Co.'s No. 1 Harshman, Sec. 2-26-1w ..... Rig on ground.

KIOWA COUNTY

Christian's No. 1 Jones, NE SE Sec. 8-7-18w ..... Shut down 820 ft.

LATIMER COUNTY

P. English's No. 1 Unknown, NW SE Sec. 16-6-19 ..... Shut down 1,542 ft.

LINCOLN COUNTY

Mote et al's No. 1 School Land, NW cor. Sec. 36-17-5 .... Rig on ground.

McINTOSH COUNTY

Patterson et al's No. 1 Smith, SW cor. NW SE Sec. 32-9-16 ..... Shut down 5,733 ft.

MUSKOGEE COUNTY

Sioux Oil Co.'s No. 1 Unknown, NW SE Sec. 21-11-19 ... Shut down 1,011 ft.

OKFUSKEE COUNTY

E. L. Robinson's No. 1 Rice, NW Sec. 2-10-9 ..... Location.
Shepard et al's No. 1 Neveas, SE NW SW Sec. 3-12-10.. Shut down 3,690 ft.

OKLAHOMA COUNTY

Citizens Oil Co.'s No. 1 Sage Barber, NE cor. Sec. 21-11-3w ..... Shut down 1,200 ft.
L. C. Hivick's No. 1 Sunset Addition, NW SW NW Sec. 17-11-3w ..... Shut down 5,515 ft.
J. F. Cuniff, trustee's No. 1 Church Land, NE NW SE Sec. 17-12-4w ..... Shut down 6,700 ft.

PAWNEE COUNTY

Rookstool's No. 1 Wylie, NW NE SW Sec. 6-20-5 ..... Shut down 1,950 ft.
Cochran et al's No. 1 Green, NE cor. SW Sec. 15-23-5 .... Rig.

PITTSBURG COUNTY

Tape Oil Co.'s No. 1 Fulton, SE Sec. 34-7-14 ..... Rig.
J. Morrison's No. 1 Fowler, NE SE Sec. 13-7-17 ..... Rig.
C. Kennedy's No. 1 Travis, C SW NE Sec. 15-7-14 ..... Rig.
C. Canady's No. 1 Jones, NW cor. Sec. 14-8-14 ..... Rig.

ROGERS COUNTY

Braman Oil Co.'s No. 1 Mare, C SW SE Sec. 33-19-17 .... Drlg. 125 ft.

ROGER MILLS COUNTY

Ute Oil Co.'s No. 1 Williams, C SW Sec. 23-12-24w ..... Shut down 5,150 ft.
L. C. Hivick's No. 1 Davis, C NW NE Sec. 4-11-26w .... Drlg. 3,030 ft.

SEMINOLE COUNTY

Sunray Oil Co.'s No. 1 Sunray, NW SE Sec. 35-5-5 ..... Location.

WICHITA COUNTY

Cooper & Terhune's No. 1 Blocker, NW cor. Sec. 29-8-19w. Drlg. 2,067 ft.
Burns & Prince's No. 1 Deck, SW cor. Sec. 21-8-18 ..... Shut down 1,050 ft.

OKLAHOMA PANHANDLE

TEXAS COUNTY

Cimarron Utilities' No. 1 Unknown, C SE Sec. 1-3-14 .... Spudding.
Western Prod. Co.'s No. 1 Gable, C NE Sec. 24-4-13 .... 9,000,000 ft. gas 2,750-2,860 ft.; completed.
Three Way Oil Co.'s No. 1 Crane, SW NW Sec. 11-1-18 .. Shut down 4,750 ft.

SOUTHERN OKLAHOMA

ATOKA COUNTY

Stewart-Howland's No. 1 Howard, NW SE NW Sec. 6-4s-11 ..... Drlg. 1,530 ft.
Brookshire's No. 1 R. W. Rowland, NW NE SE Sec. 18-3s-10 ..... Shut down 530 ft.

BRYAN COUNTY

Bryan County Oil's No. 1 Childs, NW SE SW Sec. 7-7-10. T. D. 650 ft.
Bush et al's No. 1 Commerce Trust, NE cor. Sec. 35-6s-9 ..... T. D. 740 ft.; plugged back to 450-80 ft.

JEFFERSON COUNTY

Smith's No. 1 McCarty, SE NW NE Sec. 18-4s-8w ..... Location.

LOVE COUNTY

Autrey et al's No. 2 Cross, CWL SE NE Sec. 27-6s-2 .... Show oil and gas 970-72 ft.; drlg. 1,320 ft.

MARSHALL COUNTY

Taliaferro et al's No. 1 fee, NW SE SE NW Sec. 34-5s-5 ..... Shut down 580 ft.
McCrory et al's No. 1 Little, NW SW Sec. 30-7s-6 ..... Bailing 10 bbls. of oil 495-97 ft.; recemented csg.; pumped 110 bbls. 30 hrs.
D. H. Curry's No. 1 Ward, NE SE SW Sec. 15-5s-6 ..... Shut down 2,310 ft.

McCURTAIN COUNTY

The Oil Journal's No. 1 Parks, C NE NW Sec. 9-6s-23 .. Shut down 50 ft.
Stewart's No. 1 Patterson, C SE SE Sec. 7-6s-24 ..... Shut down 840 ft.

PUSHMATAHA COUNTY

George's No. 1 Lane, NW SE Sec. 32-3s-15 ..... Shut down 840 ft.
Whitehead et al's No. 1 Messer, SE SW SW Sec. 35-3s-18 ..... Location.

STEPHENS COUNTY

Brown's No. 1 Hightower, SW SE NE Sec. 15-3s-5w .... N. O. C. S. 960 ft.

WILDCAT OPERATIONS IN KANSAS

(Continued from Page 54)

NORTON COUNTY

Richards et al's No. 1 Colby, Sec. 17-4-21w ..... Rig.

OSAGE COUNTY

Briggs & Smith's No. 1 Wood, SE NW Sec. 21-14-15 .... Shut down 1,050 ft.
Fields' No. 1 Usker, SE cor. Sec. 35-16-17 ..... Shut down 400 ft.

RAWLINS COUNTY

J. G. Durham et al's No. 1 Weaver, SE cor. Sec. 3-2-35w. Shut down 3,501 ft.

RICE COUNTY

Detrick & Langston's No. 1 Purcell, NW cor. Sec. 33-19-9w ..... Conglomerate 3,225-46 ft.; show oil and water; drlg. 3,320 ft.
Cress et al's No. 1 Sharp, SE NE Sec. 13-20-10w ..... Show oil 3,107-15 ft.; Silicious 3,-330-36 ft.; estimated 1,500 bbls.; shut in.
Allison-Fitzwilliams' No. 1 Blake, NE NW Sec. 9-18-10w. Drlg. 2,865 ft.

RUSH COUNTY

Dewey & Mitchell's No. 1 Greenawalt, C SW Sec. 17-19-16w ..... Drlg. 3,763 ft.

RUSSELL COUNTY

Agate Oil & Gas Co.'s No. 1 Rochfellow, SE cor. Sec. 6-13-12w ..... Shut down 3,374 ft.
Gilbreath et al's No. 1 Bratton, C NE Sec. 33-11-13w .. Show oil 3,090-94 ft.; shut down 3,504 ft.; plugging back to 3,-189 ft.

SEDGWICK COUNTY

Magnolia's No. 1 McLaughlin, NW cor. Sec. 31-28-1w .... Drlg. 2,145 ft.
Buck et al's No. 1 McMananan, NE NW NW Sec. 2-29-1. Drlg. 3,570 ft.

SALINE COUNTY

Twin Mounds Oil Co.'s No. 1 Weis, C W half NE NW Sec. 20-13-4w ..... Fishing 2,710 ft.

SHERIDAN COUNTY

Flo et al's No. 1 Shoemaker, SE SW SW Sec. 27-7-26w... Shut down 2,445 ft.

STAFFORD COUNTY

Rosenthal, Stanolind and Amerada's No. 1 Gray, C NE Sec. 11-24-13w ..... Shut down 2,900 ft.

STEVENS COUNTY

Argus Prod.'s No. 2 Christopher, C NE Sec. 10-33-39w .. Shut down 5,521 ft.

SUMNER COUNTY

Tighe et al's No. 1 Thieson, C NW SE SE Sec. 22-34-2 .. Drlg. 1,690 ft.
Trees Oil Co. and Shell's No. 1 Springate, NE SE SW Sec. 6-34-2 ..... Drlg. 450 ft.
Spencer et al's No. 1 Porter, NE SW Sec. 12-33-4w .... Drlg. 2,720 ft.
Ostot et al's No. 2 Marlow, C SE NW SE Sec. 22-32-2w.. Drlg. 4,135 ft.

WASHINGTON COUNTY

Sincox et al's No. 1 Penwell, NW SE NE Sec. 16-3-3 .... Shut down 1,720 ft.

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Oklahoma-Kansas and Eastern Pipe Line Report

OKLAHOMA-KANSAS

Pipe Line Statement for June Runs

	Month (bbls.)	Dy. av. (bbls.)
Prairie P. L. Co.*	747,000	24,900
Gulf P. L. Co.	1,748,421	58,281
Texas P. L. Co.	772,241	25,741
Empire P. L. Co.	2,554,219	85,141
Magnolia P. L. Co.	1,449,089	48,303
Cosden P. L. Co.	616,667	20,555
Stanolind P. L. Co.	3,135,000	104,500
Oklahoma P. L. Co.	1,944,819	64,827
Other lines	7,038,000	234,600
Total June	20,005,456	666,848
Total May	20,731,690	668,764
Difference	726,234	1,916

Shipments

Prairie P. L.	2,147,395	71,580
Gulf P. L. Co.	1,536,830	51,228
Texas P. L. Co.	1,228,277	40,942
Empire P. L. Co.	2,901,757	96,725
Magnolia P. L. Co.	1,509,866	50,329
Cosden P. L. Co.	630,682	21,023
Stanolind P. L. Co.	3,466,680	115,556
Oklahoma P. L. Co.	2,345,085	78,169
Other lines	6,660,000	222,000
Total June	22,426,572	747,552
Total May	23,179,595	747,728
Difference	753,023	176

Stocks

Prairie O. & G. Co.	37,680,000
Gypsy Oil Co. and Gulf P. L. Co.	9,130,700
The Texas Company	3,228,595
Empire P. L. Co.	4,974,188
Magnolia Petroleum Co.	6,238,739
Mid-Continent Petroleum Corp.	2,729,851
Stanolind Crude Oil Pur. Co.	18,904,000
Oklahoma P. L. Co.	2,318,945
Carter Oil Co.	8,603,483
Other lines	19,822,000
Total June	114,630,501
Total May	114,870,509
Difference	240,008

*Estimated.

EASTERN PIPE LINE REPORT FOR MONTH OF JUNE

Runs From Wells

In the following table will be found the regular receipts from wells by various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky, Illinois, Indiana and Michigan for May and June:

	May, 1931	June, 1931
Nat. Transit	143,585.75	142,665.44
S. W. Pa. P. L.	74,718.32	74,374.26
Eureka P. L.	293,679.22	303,225.17
Buckeye P. L. (Macksburg)	292,687.45	293,480.77
Buckeye P. L. (Cleveland)	13,408.00	11,410.57
Buckeye P. L. (Lima, etc.)	80,369.42	87,182.23
Indiana P. L.	3,425.44	3,000.67
Cumberland P. L.	158,976.48	156,303.08
N. Y. Transit	28,296.26	28,964.10
Tide Water P. L.	24,946.95	25,859.99
Pure Oil	188,974.65	173,774.98
Stoll Oil Ref.	26,609.87	.....
Bradford Transit	324,013.67	323,059.46
Total	1,653,692.08	1,623,300.72
Daily average	53,344.91	54,110.02

Petroleum Deliveries

The following tables exhibit the shipments or regular deliveries of various pipe lines in New York, Pennsylvania, West Virginia, Ohio, Kentucky and Indiana for May and June:

	May, 1931	June, 1931
Nat. Transit	494,823.01	452,276.53
S. W. Pa. P. L.	442,582.39	446,843.13
Eureka P. L.	328,121.10	400,401.52
Buckeye P. L. (Macksburg)	231,067.12	265,663.53
Buckeye P. L. (Cleveland)	1,709.67	1,709.71
Buckeye P. L. (Lima, etc.)	1,588,533.48	1,950,031.09
Indiana P. L.	1,121,163.38	998,821.71
Cumberland P. L.	109,505.58	103,631.73
Southern P. L.	88,868.78	11,865.96
N. Y. Transit	191,931.04	169,549.34
Northern P. L.	177,918.97	144,262.80
Tide Water P. L.	454,064.43	472,572.62
Pure Oil	256,536.46	290,068.38
Bradford Transit	304,084.82	319,547.18
Tuscarora	385,769.63	607,326.68
Total	6,176,679.86	6,634,671.91
Daily average	199,247.74	221,155.73

Gross Stocks

The gross stocks held by various pipe lines in the oil producing sections of New York, Pennsylvania, West Virginia, Ohio, Indiana and Kentucky and Indiana at the close of May and June:

	May, 1931	June, 1931
Nat. Transit	753,134.11	698,669.24
S. W. Pa. P. L.	512,838.77	410,763.21
Eureka P. L.	1,817,026.88	1,839,668.05
Buckeye P. L. (Macksburg)	370,904.34	373,836.66
Buckeye P. L. (Cleveland)	58,962.66	86,846.76
Buckeye P. L. (Lima, etc.)	3,641,367.87	3,163,645.51
Indiana P. L.	518,335.78	508,947.64
Cumberland P. L.	644,027.51	639,041.14
Southern P. L.	317,548.61	248,232.04
N. Y. Transit	126,136.54	156,733.77
Northern P. L.	339,978.15	282,847.01
Tide Water P. L.	863,211.61	836,307.12
Pure Oil	541,284.20	426,437.22
Tuscarora	13,462.07	12,683.45
Bradford Transit	210,020.88	238,670.71
Total	10,728,239.98	9,903,349.52
Decrease	316,247.61	824,890.45

Grades of Oil

The following table shows the amount of the different grades of oil held by the eastern pipe lines at the close of May and June, showing gross stocks of above fields:

	May, 1931	June, 1931
Pennsylvania	3,895,594.08	3,682,748.26
Lima	792,443.56	763,086.16
Kentucky	654,328.32	649,341.95
Mid-Continent	4,854,341.47	4,391,327.49
Michigan	531,532.55	416,845.67
Total	10,728,239.98	9,903,349.53

Daily Average Runs

The following table shows the daily average runs of the Pennsylvania, Lima and Kentucky oil fields for the past four years:

	1928	1929	1930	1931
Jan.	52,904	51,749	75,907	53,939
Feb.	57,002	51,833	79,256	55,163
Mar.	57,485	54,252	76,688	54,331
Apr.	56,812	58,444	84,536	54,914
May	62,067	59,902	70,546	53,344
June	58,230	58,833	75,430	54,110
July	57,144	66,087	68,921	.....
Aug.	57,745	66,087	54,291	.....
Sept.	53,487	67,315	56,595	.....
Oct.	58,100	76,093	58,179	.....
Nov.	53,865	74,831	52,332	.....
Dec.	52,025	74,561	53,999	.....

Daily Average Shipments

The following table gives daily average shipments from the Pennsylvania, Lima and other fields for the past four years:

	1928	1929	1930	1931
Jan.	146,465	165,721	217,623	175,369
Feb.	167,368	159,387	224,355	183,494
Mar.	158,883	161,474	228,846	189,508
Apr.	172,935	169,737	241,845	191,450
May	180,559	184,281	248,383	199,247
June	188,024	185,404	234,401	221,155
July	189,470	194,763	207,094	.....
Aug.	192,853	194,946	205,506	.....
Sept.	194,138	201,214	193,999	.....
Oct.	176,000	191,367	157,675	.....
Nov.	176,898	202,743	146,638	.....
Dec.	173,572	186,257	143,001	.....

Gross Stocks

In the following table will be found the gross stocks of the various lines of the Pennsylvania, Lima and Kentucky oil fields, including oil received from other lines at the close of each month for the past three years:

	1929	1930	1931
Jan.	7,596,564	12,220,045	11,831,092
Feb.	8,738,835	12,991,561	11,606,489
Mar.	9,002,058	13,247,217	11,012,162
Apri.	8,978,172	13,233,961	11,044,487
May	8,903,560	13,052,953	10,728,239
June	8,921,275	13,396,855	9,903,349
July	9,211,595	13,268,562	.....
Aug.	9,440,643	13,047,051	.....
Sept.	9,443,067	12,812,018	.....
Oct.	9,441,101	12,437,555	.....
Nov.	9,868,538	11,851,380	.....
Dec.	11,253,953	11,751,952	.....

The Illinois Field

The following table gives the report of the Illinois Pipe Line Co. in Illinois:

Gross stocks, July 1	606,780.26
Runs from wells	484,945.79
Regular deliveries	294,398.14
Other deliveries	234,888.00

The amount of Illinois oil run by the Tide Water Pipe Co. in June was 25,859,.99 bbls. Deliveries were 25,859.99 bbls. Adding these figures to those of the Illinois Pipe Line Co. makes the rune and deliveries as follows:

	Runs	Deliveries
1931—		
June	510,805.78	320,258.13
1930—		
January	543,387.95	498,293.93
February	548,416.33	414,536.59
March	631,944.49	469,119.53
April	530,074.22	509,304.60
May	606,147.37	504,063.84
June	572,662.57	468,658.81
July	604,529.54	388,454.47
August	594,642.12	375,742.43
September	457,001.11	371,691.63
October	478,442.12	320,688.73
November	422,794.68	355,403.12
December	556,418.78	363,719.55
1931—		
January	468,429.04	669,573.19
February	429,284.54	461,262.85
March	424,638.23	356,663.26
April	421,814.98	282,532.65
May	433,231.80	322,513.95

Tide Water Pipe Co., Ltd., also delivered in June 172,608.35 bbls. Oklahoma oil.

AVERAGE DAILY RECEIPTS OF CALIFORNIA CRUDE AND REFINED OIL AT ATLANTIC AND GULF PORTS

Average barrels per day in 1930-31—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleas, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
July	17,355	7,774	43,419	23,839	6,452	98,839	.....	.....	.....	.....	4,645	103,484
August	7,413	8,742	38,968	21,226	5,258	81,613	.....	.....	.....	.....	97	81,710
September	6,300	6,400	25,600	13,400	9,567	61,267	.....	.....	.....	.....	2,433	63,700
October	2,516	3,065	27,258	16,419	4,903	54,161	.....	.....	.....	.....	5,355	59,516
November	8,367	6,233	33,800	17,733	4,600	70,733	.....	.....	.....	.....	4,800	75,533
December	5,516	4,323	30,645	9,678	3,580	53,742	.....	.....	.....	.....	4,645	58,387
January	8,387	6,613	31,968	14,678	11,096	62,742	.....	.....	.....	.....	6,129	68,871
February	5,787	2,713	29,143	4,000	5,750	47,393	.....	.....	.....	.....	3,750	51,143
March	10,032	1,611	21,388	7,324	8,774	49,129	.....	.....	.....	.....	6,355	55,484
April	5,133	.....	19,200	16,500	10,067	50,900	.....	.....	.....	.....	4,000	54,900
May	4,452	3,064	19,903	11,226	6,258	44,903	.....	.....	.....	.....	2,355	47,258
June	4,367	.....	25,100	6,333	3,500	39,200	.....	.....	.....	.....	.....	39,200

AVERAGE DAILY IMPORTS OF CRUDE AND REFINED OIL AT PRINCIPAL UNITED STATES PORTS

Average barrels per day in 1930-31—	ATLANTIC PORTS Baltimore	Boston	New York	Philadelphia	Others	Total	GULF COAST PORTS Galveston	New Orleas, Baton Rouge	Port Arthur, Sabine Pass	Tampa	Total	Total all ports
July	42,097	9,548	154,968	37,935	36,032	280,500	5,678	9,161	2,097	2,387	19,322	299,903
August	39,032	4,484	145,613	33,355	25,097	247,581	8,419	9,323	8,548	3,000	29,200	276,871
September	38,867	8,533	150,933	34,500	25,567	258,400	6,433	12,234	.....	3,800	22,467	280,867
October	19,839	11,742	146,494	35,355	26,967	240,097	6,065	7,967	2,774	2,545	18,451	258,548
November	39,633	35,900	124,633	36,467	24,667	261,300	2,467	7,366	.....	1,767	11,600	272,900
December	21,419	14,033	122,774	32,839	33,774	224,839	6,290	10,613	2,097	290	19,290	244,129
January	17,413	13,519	154,225	32,902	30,612	248,871	2,032	11,677	2,097	3,097	18,903	267,774
February	31,321	16,929	127,746	31,714	26,857	234,607	4,536	11,571	.....	536	16,643	251,250
March	27,645	18,935	141,160	26,290	21,129	238,161	4,065	2,580	.....	1,968	8,613	246,774
April	35,000	10,533	105,000	29,767	35,533	215,833	2,733	3,400	.....	.....	6,133	221,966
May	30,129	8,774	107,000	25,452	26,710	198,065	.....	2,000	.....	.....	2,000	200,065
June	30,067	10,833	111,767	27,000	20,833	200,500	3,300	5,500	2,167	1,333	12,300	212,800

GROSS PRODUCTION OF CRUDE OIL IN THE UNITED STATES FOR 12 MONTHS

(In Barrels of 42 Gallons)

		California	Oklahoma	Texas	Kansas	Arkansas	Louisiana	Rocky Mts.	Eastern	Total
1930—										
July:	Month	18,862,024	18,032,514	25,973,521	3,541,409	1,713,680	2,079,769	3,275,894	3,830,000	77,248,811
	Daily average	606,517	581,694	857,856	114,239	55,250	67,089	105,674	123,548	2,491,897
August:	Month	18,770,466	17,162,034	25,069,593	3,491,530	1,700,102	2,151,120	3,193,341	3,417,000	74,955,191
	Daily average	605,499	553,614	808,696	112,630	54,842	69,391	103,011	110,226	2,417,909
September:	Month	17,984,306	16,509,120	23,111,822	3,405,510	1,583,280	2,008,060	3,229,010	3,396,000	71,237,103
	Daily average	599,477	550,304	770,394	113,517	52,776	66,935	107,967	113,200	2,374,570
October:	Month	18,244,053	16,632,523	23,626,553	3,571,913	1,636,552	2,142,885	3,225,550	3,627,000	73,707,029
	Daily average	588,518	536,533	762,147	115,223	52,792	69,125	104,050	117,000	2,345,388
November:	Month	18,169,459	14,941,770	22,035,222	3,459,330	1,557,870	2,136,948	2,967,100	3,222,000	68,419,699
	Daily average	603,648	498,059	734,507	115,311	51,929	71,231	98,570	107,400	2,280,656
December:	Month	17,786,728	15,057,103	21,810,359	3,432,661	1,590,951	2,157,534	3,118,663	3,328,000	68,281,999
	Daily average	573,765	485,713	703,560	110,731	51,321	69,598	100,602	107,355	2,202,645
1931—										
January:	Month	16,485,738	14,850,953	20,019,212	3,432,475	1,574,955	2,135,037	2,966,142	3,374,000	64,838,512
	Daily average	531,798	479,063	645,781	110,725	50,805	68,872	95,682	108,839	2,091,565
February:	Month	14,930,932	13,531,980	18,957,571	3,341,016	1,402,492	1,981,616	2,747,024	3,129,000	60,021,631
	Daily average	533,248	483,285	677,057	119,322	50,089	70,772	98,108	111,750	2,143,629
March:	Month	16,364,842	16,627,687	22,453,619	3,498,598	1,469,245	2,061,576	2,898,035	3,374,000	68,747,602
	Daily average	527,898	536,377	724,310	112,858	47,395	66,502	93,485	108,839	2,217,665
April:	Month	15,803,541	16,815,990	26,687,717	3,281,880	1,412,220	2,008,021	2,901,870	3,273,000	72,384,239
	Daily average	526,785	559,255	896,267	109,396	47,074	66,934	96,729	109,100	2,412,808
May:	Month	16,448,960	17,333,867	28,703,684	3,341,366	1,446,274	2,222,548	3,095,419	3,190,000	75,800,128
	Daily average	530,612	559,157	926,086	107,786	46,654	72,018	99,949	102,900	2,445,166
June:	Month	15,641,436	16,678,200	29,139,833	3,175,440	1,344,450	1,850,511	2,986,200	3,166,000	73,982,070
	Daily average	521,381	555,940	971,327	105,848	44,815	61,684	99,540	105,533	2,466,069
Total 12 months		205,372,485	194,173,741	287,793,711	40,973,128	18,432,071	24,945,645	36,607,243	40,326,000	848,624,029